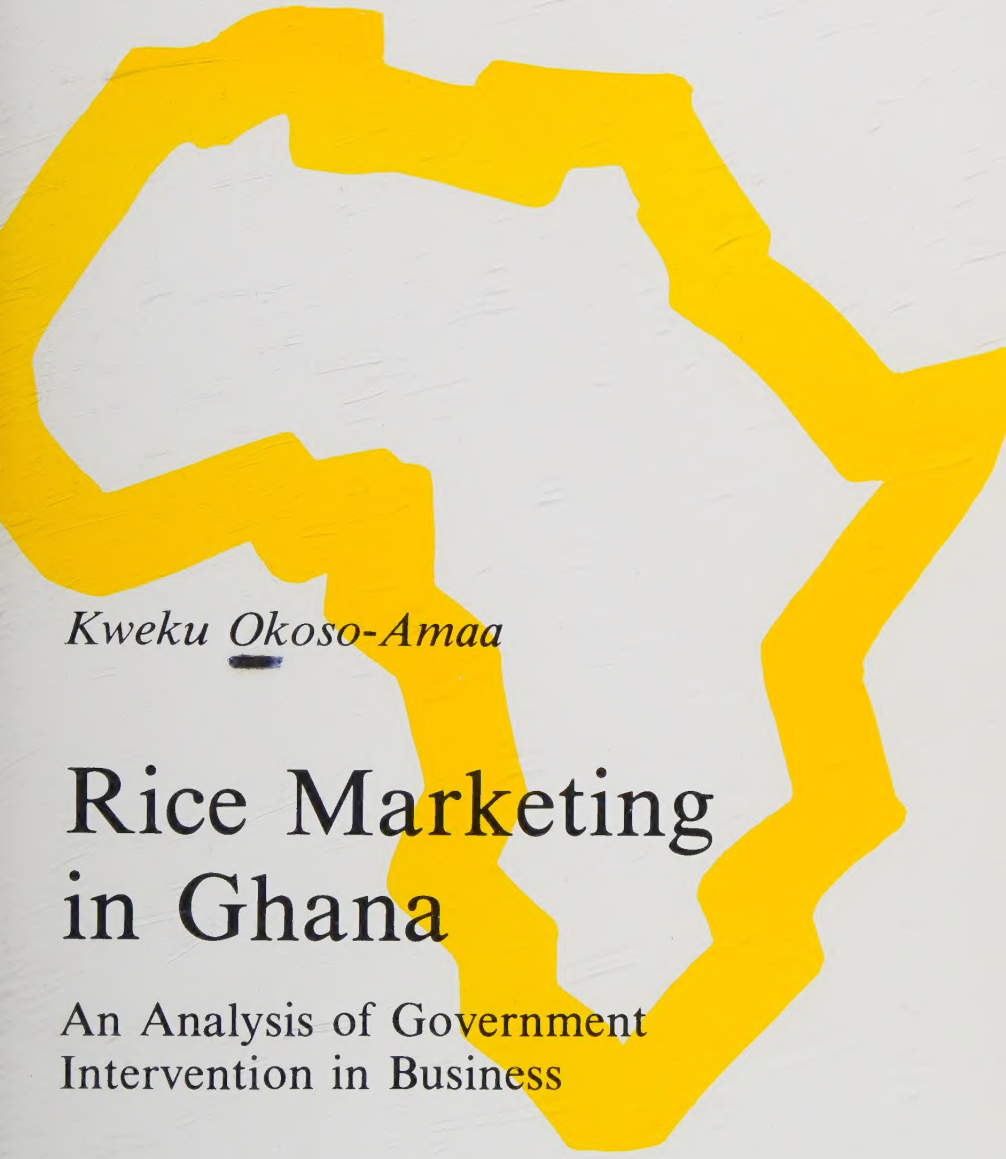

Kweku Okoso-Amaa

Rice Marketing in Ghana

An Analysis of Government Intervention in Business

1975

Scandinavian Institute of African Studies, Uppsala

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RICE MARKETING IN GHANA: AN ANALYSIS OF GOVERNMENT INTERVENTION IN BUSINESS

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av

Kweku Okoso-Amaa

Rice Marketing in Ghana.
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Foreword and Acknowledgements

The present work is the first exploratory analysis of Government intervention policies in a specific area of agrobusiness, namely, the production and marketing of rice in Ghana. My interest in this study was aroused a few years ago, when some newspaper articles reported popular concern about shortages of rice in some consuming areas, rising imports and the difficulties experienced by farmers and some milling firms in the Northern and Upper Regions in marketing their products. This was described as a problem of "no market" to the consumers, the farmers, and other business firms and to the Government.

I decided to study the problems of "no market" within a general frame of Government intervention in the Ghanaian rice business. The distribution channel, which comprises farms, milling firms, wholesale and retail stores and institutions providing ancillary functions, has been the primary level for the investigation. This proved to be an enormous subject that has multidisciplinary characteristics. In the course of the investigation I had to change the level from an overall channel (macro) to the level of individual stages (micro), such as the farms and the milling firms. As a result the content of this investigation hovers between two levels of discussion: macro and micro. This means that certain problems which might have required more details had to be left, in order to balance the levels of discussion and, also, for further studies.

During November 1973–February 1974, I made a study trip to Ghana, where I visited some of the farms and milling firms in the Northern and Upper Regions. I also visited a number of other institutions and Government departments where I had many useful discussions and conversations with persons connected with the operation of the intervention measures.

I would like to thank the following: Dr. J. A. Agyare of the Ministry of Agriculture for his helpful suggestions; Mr. J. E. M. Bartels of the Food Research Institute, Accra, for the permission to make use of their resources; Mr. F. N. Ghartey of the Grains Development Board, Kumasi, for the many stimulating conversations on the subject; Mr. J. B. Ampah, the Manager of Tamale Rice Mills, for his invaluable help and guidance; research colleagues of the Institute for Statistical, Social and Economic Research, Legon, for the consent to discuss my research project; many friends from whom I received many kindnesses and the businessmen, farmers, consumers, etc. who patiently answered some of the questions in our conversations and discussions and those three friends who helped in many of such discussions in the Northern and Upper Regions.

I am especially grateful to the Swedish International Development Authority and the Scandinavian Institute of African studies for their financial support for the study trip. My special appreciation goes to Docent Peter Söderbaum, Dr. Finn Wiedersheim-Paul and Prof. Sune Carlson for their recommendations which led to the financial supports I have received for my studies and the trip to Ghana.

The research was carried out at the Department of Business Administration, Uppsala University, Sweden, where I had the privilege of Prof. Carlson's supervision from the beginning to the end of my investigation. I am particularly grateful for his

guidance and continued support for my studies. I acknowledge with special gratitude the guidance, support and criticism of Asst. Prof. Harry Nyström. On the other hand, I can only inadequately express my indebtedness to Docent Peter Söderbaum who directed the project at every stage of its development.

Finally my special thanks are due to my colleagues—Anders Ågren, Quazi Mansur, Kweku Sekyiama, etc., for their moral support, useful suggestions and critical reading of successive seminar drafts. Special recognition with thanks go to the office personnel especially those in the stencil-room, for the preparation of drafts for seminars.

Inspite of the above-mentioned the reponsibility for wrong interpretations or errors of facts which the research may still contain and the opinions expressed in this research is entirely mine.

Kweku Okoso-Amaa

Uppsala University
Department of Business Administration
Uppsala, Sweden
March 1975

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Conversion chart

1 oz.	=	28.35 grammes
0.04 oz.	=	1 gramme
1 lb.	=	45.454 grammes
100 lbs.	=	45.46 kilogrammes
2.20 lbs.	=	1 kilogramme
2,240 lbs	=	1 Long Ton = 1,018.18 kilogramme
2,000 lbs.	=	1 Short Ton = 909.09 kilogrammes
1 long ton divided by 1.12	=	1 Short ton
1 short ton × 1.12	=	1 Long ton
(Paddy) 180 lbs	=	120 lbs rice
(approx. 82 kg. paddy)	=	54.54 kg. rice
12.4 bags of paddy	=	1 long ton
22.4 bags of rice	=	1 long ton
1 "cigarette" tin (rice)	=	11 ozs.
3 microgrammes	=	1 international unit (I.U.)
4-gallon "kerosene" tin	=	approx. 15 kilogrammes
₵1.00 (one cedi)	=	approx. skr. 4.20 (average rate for 1973)

Some of the terms used in Rice Marketing

A. General

Paddy. Rice in the husk after threshing; unmilled rice. It is sometimes called "rough rice", "paddy rice" or "husked rice".
Rice. Kernels obtained after milling or husking of paddy. It is often referred to as "milled rice".
Sample. A small quantity taken from various portions of a large quantity so that it represents the lot.

B. Intrinsic Characteristics

Extra long rice. Rice with 80 per cent or more of its whole milled kernels having an average length of 7.0 mm and above, e.g., "Alupi", a local variety in the Northern Region.
Glutinous Rice. A variety whose grains are white and chalky in appearance. It tends to coagulate into a sticky mass when cooked. This variety is normally parboiled before milling, e.g. Bazolugu.
Long rice. A variety with 80 per cent or more of its whole milled kernels having an average length of between 6.0 and 6.99 mm. For example, Gona, a variety grown in the Northern Region.
Medium rice. A variety with 80 per cent or more of its whole milled kernels having an average length of between 5.0 and 5.99 mm, as for example, C4.63 and IR.5, imported varieties from International Rice Research Institute, Los Banos, The Philippines.
Short rice. A variety whose kernel is generally round. The length of its whole milled kernel is less than 5.0 mm or less than twice its breadth. For example. Palawan, a local variety.
Shape. Refers to the relationship of length to breadth of a whole dehusked rice kernel.
Size. Refers to the length of at least 80 per cent of whole milled kernels.

C. Processing

Bran. The pulverized meal (of outer layers, part of the germ and starchy endosperm) resulting from milling, pearling and polishing the kernels.
Degree of milling. Refers to the proportion of the germ, the outer and inner bran layers that has been removed. It is also related to the appearance of the kernels: If it is not glazed, the whiter the kernels appear the higher is the degree of milling.
Extra well milled rice. Is rice which is mainly the starchy endosperm because the husks, the germ, and the bran layers have been completely removed.
Germ. Small white portion at one end of the rice kernel from where the seed germinates.
Glazed rice. Milled rice which have been coated with special powder e.g., talcum, and glucose or treated with vitamins and minerals so as to improve its nutritive value. Glazed rice may also be referred to as "coated" or "enriched" rice.
Husk. Outer thick, dark brown cover of paddy, the removal of which turns it into rice. It is also known as "glumes" or "hull".
Husked rice also known as "brown", "hulled" or "cargo" rice have kernels from which only the husk has been removed.
Nongelatinized rice. Whole or broken kernels of parboiled rice with distinct white or chalky portions due to incomplete gelatinization of the starch.
Parboiled rice. Rice, e.g., glutinous, which has been soaked in hot water or steamed under pressure, and dried before milling.
Undermilled rice has the husk, part of the germ and all or part of only the outer bran layers removed. e.g., traditionally milled rice.
Well-milled rice has the husk, the germ, the outer bran layers and the greater part of the inner bran layers removed, but parts of the lengthwise streaks of the bran layers may still be present on not more than 10 per cent of the kernels.
Whole rice is a kernel or a piece of the kernel having a length which is or more than 80 per cent or greater than three quarters of the average length of the unbroken kernel (sometimes called "head" rice).

D. Acquired Characteristics

Brokens. Pieces of kernels equal to or smaller than three quarters of the average length of the unbroken kernel. In relation to the "head" rice brokens can be "big or three-quarter", "medium or half-" or "small or one-quarter" brokens.

Chalky kernel. Kernel, whole or broken, one half or more of which is white like the colour of chalk.

Chips. Pieces of kernel that pass through a sieve which has round perforations not greater than 1.4 mm in diameter.

Commercially objectionable odours. Odours entirely unnatural to rice and which render it unfit for its normal commercial usage or purposes. Odours may result from improper drying of rice with high moisture content or from parboiled rice.

Contrasting classes sometimes known as "mixed" rice have kernels, whole or broken, of varieties of rice other than the variety designated, wherein size and shape of kernels differ distinctly from characteristics of kernels of the variety or class designated. For example IR.5 may be mixed with IR.8. IR.20 and/or C4.63. This is also called "adulteration", which may be done intentionally to attain a given grade.

Damaged kernels. Kernels, whole or broken, which are distinctly damaged by insects, water, fungi, rats, rodents, birds, improper milling, processing and storage practices. This includes "discoloured" kernels, e.g., kernels that have changed their normal colour as a result of processing, bad handling procedures.

Grade. A designation indicating the quality of rice determined on the bases of certain intrinsic and acquired characteristics. For example, grades I, II, III, IV have differing proportions of brokens, head rice, etc.

Inedible matter. All matter or objects other than rice kernels, broken or whole and chips. This includes damaged kernels, discoloured, and paddy, stones, pieces of sticks and metall.

Insect-free rice. Rice which does not contain live or dead weevils or other insects, insect webbing or their refuse.

Slightly infested rice. Contain not more than 5 live or dead weevils and not more than 15 living or dead of other insects per 100 lbs or 60 kg. of rice.

Medium brokens. Pieces of kernels which are equal to or smaller than one half but bigger than one quarter of the average length of the unbroken kernel.

Mixed rice. A lot of rice in which a minimum of 80 per cent of whole milled kernels cannot be placed exclusively in any single variety, size, shape or weight classification.

Red kernels. Kernels, whole or broken, which have 25 per cent or more of their surface coated with red bran.

Red streaked kernels. Kernels, whole or broken, having red streaks the total length of which amounts to one half or more of the length of the kernel, but which are free from red patches amounting to 25 per cent of the surface area of the grain.

Small brokens. Pieces of a kernel which do not exceed one quarter of the average length of the unbroken kernel, the minimum limit varying with different grades of rice, but do not pass through a sieve with round perforations of 1.4 mm in diameter.

Stained or spotted kernels. Kernels, whole or broken, which show on their surface evident alteration of colour, including black streaks or dark haloes.

Yellow kernels, Kernels, whole or broken, which have yellow discolouration brought about by deterioration.

Variety refers to classes or species of paddy, but species are known to have been bred or cultivated from two origins: Oryza sativa and Oryza Glaberrima. Species found in Ghana belong to Oryza Glaberrima classification.

1. Introduction

1-1. Background

Production and marketing of rice has been a peasant occupation for a very long time. Towards the middle of the 1920s, it was discovered that a large proportion of the annual requirements for the country had been imported. The then colonial Government decided to encourage local production. The process by which the Government became involved in the rice business is what we shall call intervention (see Section 2-2 for a formal definition).

Government intervention in the rice business begun with Esiama Rice Mill in 1926. The Mill operated under various governmental supervisory agents for twenty six years. It was closed down in 1952 because it had become too expensive to operate.[1]

A more recent intervention was initiated after 1963 under an Import Substitution Policy.[2] The Government established and financed co-operative farms and encouraged both small- and large-scale private farms to grow paddy. Four of the state farms also cultivated paddy. Fifteen rice mills were imported from West Germany in 1964.[3] Some of the mills were located near paddy growing farms so that they could buy paddy at guaranteed price to be decided by the Government. One of the first eight installed mills is the Tamale Rice Mill. This Mill was to buy and process paddy from private farms.[4]

Before these mills went into operation there seemed to be occasional food shortages, (especially in towns) which the then Government considered as "temporary".[5] Some studies[6] on the marketing of local foodstuffs indicated that cereals, especially rice, have been relatively the most expensive products on the markets during that period.[7]

In order to alleviate the problem of food shortages large quantities of rice have had to be imported (see Appendix A. 1). Import requires foreign exchange of which the available reserves had virtually been used up.[8] In December 1961, the size of the trade deficit forced the Government to impose a duty on rice imports.[9] Series of administrative and fiscal policies were taken to ensure state monopoly over the importation of rice and its distribution through Ghana National Trading Corporation.

In 1966, the Nkrumah Government which initiated these intervention measures, was replaced by the National Liberation Council in a Police-military coup. The National Liberation Council adopted stabilization measures of which some affected the construction and/or the operation of some of the state-owned milling firms.[10] Apart from the state farms, Tamale Rice Mill appeared to have been the only one of the installed mills which had begun to process private farmers' paddy in 1966/67. The Ghana Cocoa Marketing Board took over the management of the Mill from the defunct United Ghana Farmers' Co-operative Council. Since then The Mill has been managed by the Northern Region Rice Marketing Committee. In 1970 the Ministry of Agriculture decided to operate Tamale Rice Mill and six other mills in the Northern and Upper Regions as "Rice Mills Unit" on "commercial lines".[11]

After the coup of 1966, the duty on imported rice was waived. Apart from commercial import of rice, imports increased under the impact of food aid agreements.[12] After the 1966 67 milling season, there were frequent complaints from rice-growing areas about slowly moving stocks.[13] This seemed to have created some problems for the Extension Services Division "in getting rid of farmers' rice".[14]

Problems which were experienced in the sale of farmers' paddy seemed to have been carried through the latter half of the 1960s. During the milling season of 1969/70 the then Upper Region Chief Executive, Imoro Salifu, complained that "farmers in his region produced enough paddy and other food crops ... but there (were) *no markets* for them".[15] It seems that there had been a certain amount of unsold paddy for every year during 1966/67-1969/70.[16]

The evidence seem to suggest that the state-operated milling firms had been encountering some difficulties in marketing their rice.[17] During his visit to Tamale Rice Mill in 1969/70 milling season, J. A. Brimah, the then Northern Region Chief Executive, "was told that over 1,000 bags of milled grade one rice were (then) stocked at the mill and that there was *no market* for them".[18]

These developments seem to have kindled the interest of the general public and its concern over the milling and the marketing performances of some of the intervention measures. A conference was held in 1968 to discuss some of the no market problems and to recommend steps that should be taken to achieve self-sufficiency in rice.[19] As the years wore on, the concern over the growing rice imports and the continuing difficulties being experienced by the milling firms in the sale of their rice had begun to attain broader political significance.[20] Grains Development Board was established in 1969 to promote the production of grains and legumes. In 1970 another conference on the production of rice was held to discuss the ways and means of improving the performance of the Rice Mills Unit and other intervention measures.

1-2. Definition of the Problems for this Research

It may be recalled that the concern about the performances of farmers and the milling firms revolved around what had been known as the "no market" problem. The term "no market" seems to have been used to describe either (a) the inability of the business firms to market paddy and/or rice, (b) the lack of adequate demand for paddy and rice (c) or the incidence of both (a) and (b). The repurcussions of such market situations are likely to cause some economic and political problems to the Government as entrepreneur, the business firms which produce paddy or market local and imported rice and to the consumers who finally buy the rice. The nature of these problems will be discussed in Chapters 2, 3, 4 and 6.

The basic problems that prompted this research may be defined as follows: Why are there "no markets" for paddy and/or rice from the Rice Mills Unit? In what ways have the no market phenomenon been or continue to be a problem? What could be the possible consequences of the no market problem? These questions can be related to certain demands from the Government, the business firms and the consumers.

1. Considering the consumers we may ask the following: To what extent is rice important or needed in dietary requirements? How have the consumers met their dietary needs? How can consumers be related to the "no market" problems?

2. Concerning the business firms, namely, farms, Rice Mills Unit, etc. we may ask

the following: What kind of objectives do they pursue in the market? What have been their performances before and during intervention? Have they been able to provide the type of rice and marketing services as demanded by the consumers and/or the Government? To what extent have they been affected by the recent intervention and/or the "no market" problem?

3. From the Government's point of view, we may ask the following: What prompted the Government to intervene? What were the objectives of the recent intervention? How were the intervention measures implemented? What have been the effects of intervention on performance and on the "no market" problem? In what way has the Government been affected by the "no market" problem?

1-3. Research Objectives

It may not be possible to seek answers to all the questions which we have asked in the previous section. But some of them can be paraphrased into three major objectives for this research.

The first objective is to find out the reasons, discuss the nature of the chosen intervention measures and analyze how they were implemented. We can include the analysis of the effects of intervention in relation to the three interest groups, namely, the Government, the business firms (especially farms and the Rice Mills Unit) and the consumers.

The second objective is to investigate the causes of the no market and to explain why it has been considered a problem.

The third objective is to suggest a marketing system that differs from the present one. It will be referred to as Vertical Integrated Marketing System.

Other objectives of equal importance are that it is hoped that

(a) this research will add something more to the existing scanty knowledge on rice marketing in Ghana.

(b) it should stimulate further researches into the marketing of rice and other agricultural products in both the state- and private-operated marketing systems.

1-4. The Main Characteristics of my Approach to this Research

My approach can be seen in terms of the (i) collection and reliability of research materials, (ii) research methods I have used, (iii) relation of my study to other studies and (iv) a brief review of the contents.

1-4.1. On the collection and reliability of research materials

The research materials consist of statistical data and descriptive information. I obtained them from two sources. The first source comprises publications of studies and proceedings of conferences on rice production. Such materials have been cited in the notes and in the bibliography. But this source proved insufficient and

warranted my travelling to Ghana in November 1973 in order to collect additional material.

The second source of information consists of

(a) official statistics and other information, e.g. from the Rice Mills Unit, Tamale and from some divisions of the Ministry of Agriculture in Tamale and Accra.

(b) published and mimeographed studies from the libraries of the University of Ghana, Faculty of Economics; USAID Mission to Ghana, Accra; and Food Research Institute, Accra. Most of these materials provided general descriptions of rice marketing organizations. Materials from the Rice Mills Unit were sufficiently adequate and reliable. But they did not provide any record of the mills' activities during 1966/67-1969/70. As such these materials from the Rice Mills Unit contributed little to the understanding of the history of the mills.

(c) the results of a series of interviews and discussions I had with farmers, market traders, traditional paddy processors, foreign businessmen and Government officials who are connected with the production, milling, importation and marketing of rice in Ghana. These discussions took place (between 12 November 1973 and 25 January 1974) in Accra, Agona Swedru, Atebubu, Bawku, Bolgatanga, Cape Coast, Koforidua, Kumasi, Navrongo, Sekondi, Tamale and Yendi. The routes along which these interviews and discussions were conducted are shown in Fig. 1. The total number of people involved in such interviews and discussions is 186. Of this number 70 interviewees gave information on their activities during the period 1958-1962 that preceeded Government intervention in 1963 64. Among the 70 interviewees there were 6 farmers who were members of semi-cooperative groups, and 9 peasant farmers; 35 traders of the following categories: itinerant traders—5 millers and hullers—10, wholesale traders—6 and retail traders -14. The remaining 20 persons were private consumers. The other 116 respondents were private and institutional customers of the Rice Mills Unit during 1970/71-1972/73.

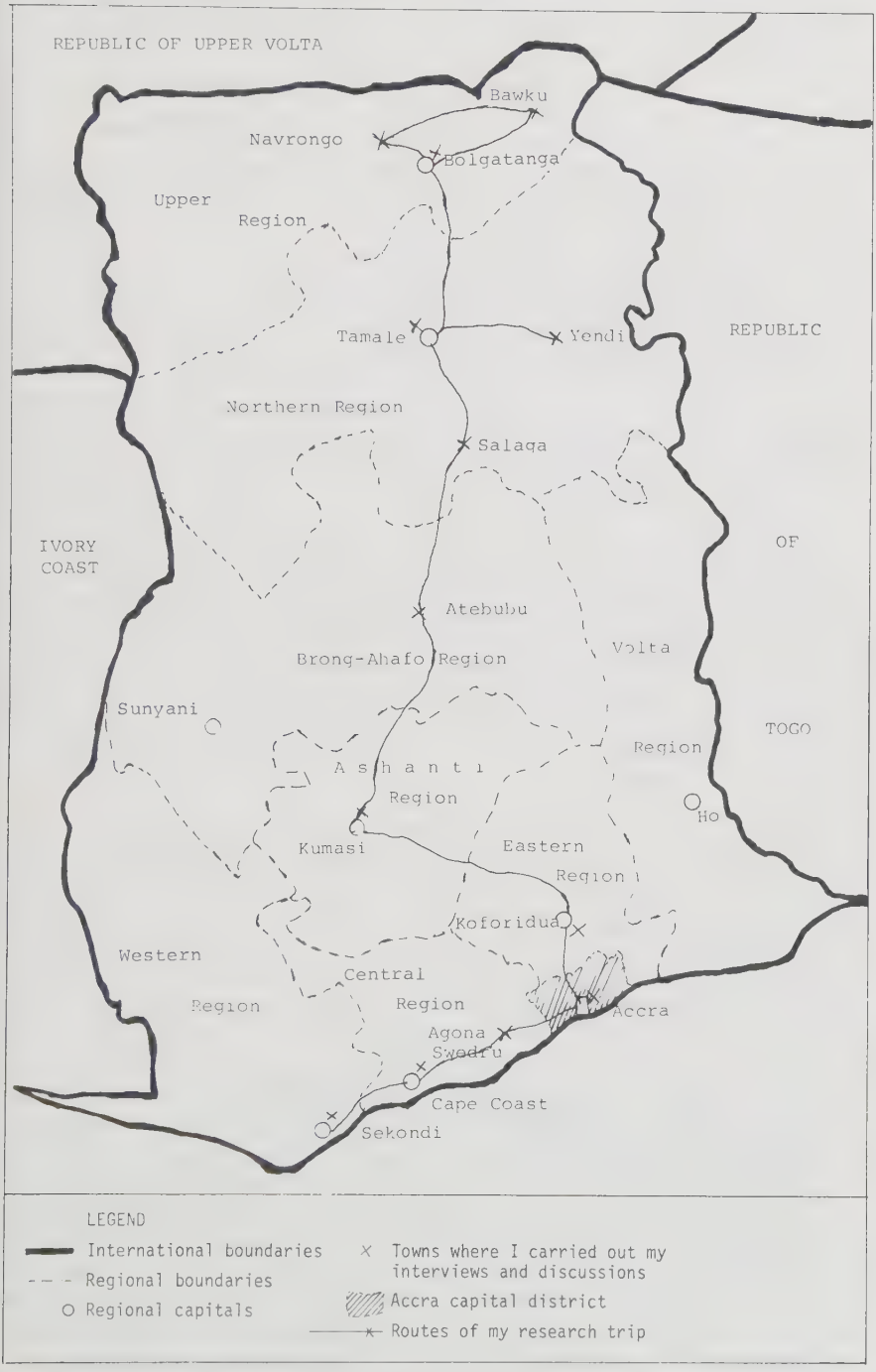
Some difficulties were encountered in the collection of materials and information from the interviewees. While some officials were unnecessarily suspicious on requests for materials, other interviewees regarded my search as inquiries on tax evasion, hoarding and smuggling, profiteering and other trade malpractices. As such I could not use the questionaires which I had prepared earlier. And casual discussion proved more useful.

Other data had to be derived from highly aggregated official statistics which showed variations in their availability and reliability. As I had the chance to discuss my research project and some of the information at three places I can assume that the data and information used in this study are sufficiently reliable.

1-4.2. Research method employed

The nature of the problems and the definition of the research objectives seems to point to an interdisciplinary approach to this study. Such an approach can pose some difficulties in defining the size and scope of the research and, even, in the choice of a research method. One way of overcoming some of these difficulties is to consider the concept of intervention (Chapter 2, Section 2-2). It indicates that intervention is possible only if there is a marketing system in operation, and that an approach such as the Concept of Systems seems more appropriate. I have therefore chosen the Concept of Systems as the main research technique.

Fig. 1. Map of Ghana showing Regions and Towns where I carried out interviews during 12 Nov. 1973–25 Jan. 1974



While the Concept of Systems allows an interdisciplinary approach to a problem of this kind, its application may be limited by the enormity of definitions found in the literature. This shows that the concept is a flexible one. Inspite of this there is an underlying principle which is apparent, more or less, in most of the definitions. The concept is considered as a set of parts co-ordinated to accomplish a set of goals.[21]

For our purpose it is necessary to lay out a series of considerations about the concept. Five of such considerations have been discussed below.

1. *A Set of Objectives.* These objectives can be the criteria by which the performance of the total system or any of its parts can be evaluated. (See Chapter 2, Section 2-3 and Chapter 5, Section 5-4).

2. *Specification of the necessary resources* which may be available or needed to achieve the purpose within the stated performance criteria. Examples of such resources can be paddy, milling facilities, skilled and experienced personnel and favourable political milieu.

3. *Identification of the parts of the system.* Parts of the system can be those interest groups such as the Government, the business firms and the consumers (see Chapter 2, Section 2-3 for further discussions).

4. *Identification of the system's environment.* This may include those internal and external factors which might influence performance. Others consider these factors as constraints.[22]

5. *The Management Effect.* In relation to the no market problem we need to consider how the objectives are or can be supported by the activities performed by each of the interest groups in the system. This consideration suggests that a management component will be needed to put forward plans that will co-ordinate the interest groups in terms of changes which might take place in points 1, 2 and 3 at a convenient time. The plan may consist of explicit steps that can be taken when the unexpected occurs.

Given the flexibility of the Concept of Systems we can assume that these considerations can be structured in many ways to obtain the desired substance of the system.

In this research the basic system in which intervention is or was contemplated is the Distribution Channel. The marketing system indicates the structure of the various distribution channels which can be used for marketing both paddy and rice. These considerations have been employed in the discussion of the basic concepts and definitions in Chapter 2. Its interpretations can be felt in the remaining chapters of this research.

It seems realistic to assume that any Government policy on the rice business could have far-reaching consequences. These may be determined by the types of *objectives* to be achieved within a given period, *the kinds of actions to be taken* and *how* the chosen set of actions is to be implemented. In theory these underlined elements may interact within certain spatial and temporal constraints to generate varying patterns of organizational structures and human behaviour in the system. As intervention was directed towards the marketing system for paddy and imported rice, it seems quite appropriate, at least in this research, to interpret the concept of marketing in terms of the objectives, the chosen set of actions and how it is implemented. One of the important advantages of this kind of interpretation is that rice markets are regarded as extensions of paddy markets. In this way we can utilize the co-ordinating and control property of the Concept of Systems to develop our model of Vertical Integrated Marketing System.

In constructing the model of Vertical Integrated Marketing System, we have also utilized Mattsson's concept of Institutional Integration as an explanatory assumption. Mattsson's concept is defined in terms of certain attributes of institutional relations such as "ownership" and the existence of a "written contract for long-term co-operation" between components A and B.[23]

We can therefore regard Government intervention measures as an integrated system of planned actions rather than as fragmented, "separate organizations or divisions"[24] of statutory agents and activities. As we have explained in Chapter 7 our suggestion can indicate possible solutions to many aspects of the "no market" problem at convenient costs to the Government, the business firms and to the consumers.

The discussion followed in this section shows that we have employed some deductive reasoning and analysis of our information on the basis of the concept of a system. Other aspects of the research method that we have employed are as follows:

(1) The singular or plural form of the first person pronoun has been used in the report.

(2) The results of my interviews were divided into information supplied by 70 interviewees in relation to their pre-intervention activities. Information provided by the remaining 116 has been used in Chapter 5, because it relates to marketing activities of the Rice Mills Unit.

(3) Description of the literature, which should have preceded, for instance Chapter 2, has been treated as an appendix. In this research we have considered the appendices as the part which should contain all the details of certain issues like statistical data and descriptive informations to which the reader may refer.

(4) References in the text have been cited in the notes, which appear at the end of the book. Other references have been indicated in the list under bibliography. The bibliography is divided into books, articles and pamphlets and other documents and newspapers.

1-4.3. Relationship to other studies

In his study of West African Trade (1954), P. T. Bauer discussed Government participation primarily in the export of crops. The connection if at all, between Bauer's study and my work may be sought in the subject, namely, Government intervention in business. I must confess that studies on this subject and, especially, in the production, milling and marketing of rice in Ghana are hard to find. On the other hand I have discussed such related works which have been relevant to my study in Appendix B.3.

This study is also related to Churchman's work The System's Approach (1968) and Stasch's Systems Analysis for Marketing Planning and Control (1972). In addition to these works, I may cite Mattsson's study on Integration and Efficiency in Marketing Systems (1969). The basic ideas (from these works) which attracted my attention have been summarized in Section 1-4.2, Chapters 2 and 7.

The choice of the subject for my research and the attractiveness of the ideas expressed in the above-mentioned studies may be explained partly, by my educational experiences in Moscow (USSR), Helsinki (Finland) and in Uppsala (Sweden) and, partly, by their relevance to the developmental needs in Ghana.

The present work has been studied from an interdisciplinary point of view. But in

some parts of the analysis the interplay of politics and business economics seems to have been emphasized.

1-4.4 Plan and brief review of the content

1-4.4.1. Plan of the research

Although a division may be arbitrary, this research can be seen in a sequence of four stages.

Stage 1. comprises three chapters. Chapter 1 provides general descriptions of the research procedures. Chapter 2 describes some of the concepts and definitions we have used. Chapter 3 describes the product -rice—in relation to the interests of the Government, business firms and consumers.

Stage 2. consists of only one chapter which sets the basis for the discussion of intervention.

Stage 3. consists of two chapters which discusses and analyzes the nature of intervention, its implementation (Chapter 5) and its effects (Chapter 6).

Stage 4. contains the suggested model (Chapter 7) and the concluding remarks of the research (Chapter 8).

Brief previews of the chapters can be read below.

1-4.4.2. Contents of the chapters

In this section we shall provide short descriptions of the contents of the chapters.

Chapter 1. Introduction. We have discussed how the research has been conducted. It describes the *background* of this research, explains what the term "no market" means and the problems which prompted me to undertake this research. The objectives of this research is to explore the causes of the "no market" problem, the effects of intervention and to suggest a different model by which, it is hoped that, some aspects of the "no market" problem could be solved. Our approach to the study of this problem is based on the concept of systems and on Mattsson's Concept of Institutional Integration. Some aspects of these concepts can be found in Section 1-4 above, and in Chapters 2 and 7.

Chapter 2. Basic Definitions and Concepts. We have employed certain elements of the Concept of Systems to define *intervention* as the process of taken timely actions to effect more desirable results in business and or the system's performance. The *system* is the distribution channel designated for large-scale commercial rice production. It comprises a set of institutional relations by which the interest groups are able to influence each other in such a way that a set of predetermined objectives can be achieved.

In this system *market* is an important element of the institutional relations. Markets show that part of the institutional relations by which the interest groups perform certain activities in the system. We have used the term *marketing* to describe the market behaviour of the interest groups. In theory behaviour may be described as the interaction of such elements as objectives, activities performed by the interest groups and how they perform those activities.

Efficiency is the degree of goal fulfilment. This can be applied to separate interest groups as well as the system. If we consider how certain activities are performed, then the degree of goal fulfilment should be related to the method or technique employed.

We have referred to this relationship as *effectiveness.*

One of the valuable implications of this chapter is that the "no market" problem concerns the relationships between the attributes of rice and the interests of the groups we have mentioned.

Chapter 3. The Product—Rice. This chapter is devoted to the description of certain attributes of rice which affect

1. consumers' dietary preferences and purchasing behaviour
2. the choice of business firms and the organizational structures of the distribution channels, etc.
3. Government policies on the scope of intervention and their political justification.

Chapter 4. Pre-intervention Rice Marketing Organizations. Pre-intervention marketing of rice seems to have been organized around local and imported rice. Indigenous Distribution Systems market mainly local rice. At certain stages of these systems imported rice was also sold. Expatriate Marketing Systems imported rice for distribution through their own stores. Certain quantities were sold to traders from the Indigenous Distribution Systems.

We have analyzed the supply conditions, available quantities for sale in a given market at a given time of the year, prices and the techniques employed by some of the traders in each of the two distribution system. Some aspects of the "no market" problem have been discussed.

Chapter 5. Government Intervention. We have discussed an earlier intervention measure—Esiama Rice Mill and mentioned the reasons for renewed interest in the intervention. Intervention was to pursue four objectives. To achieve them, the Government decided to operate a price stabilization scheme by establishing (a) farms to grow paddy, (b) milling firms, like Rice Mills Unit, to purchase paddy at guaranteed price and mill, and (c) Ghana National Trading Corporation to import rice for distribution in the country, (Section 5-5). The marketing set-up at the level of the milling firm has been described in Section 5-6. The Rice Mills Unit buys farmers' paddy at guaranteed price, process it into four different grades. The Unit's products were marketed by an Ad-hoc Agent which was often appointed by the Ministry of Agriculture. We have indicated certain factors which could affect the performance of the business firms of the intervention process.

Chapter 6. Effects of Intervention. Intervention seems to have had varying effects on the product (paddy, local and imported rice), the general structure of marketing systems and particularly the one in which Rice Mills Unit operates. We have discussed farmers' output responses to the guaranteed minimum price and the quality of the market. The performance of the Rice Mills Unit is analyzed, first, as a market for the farmers and, second, as a supplier of rice. It seems that The Rice Mills Unit has been unable to produce and market the type of rice which is more preferred by consumers. At the same time the type of marketing arrangements made for both the farmers and the mill seems to be inconsistent with the type of rice being produced. And that the effect of intervention on the "no market" problem seems to have been considerable.

Chapter 7. Vertical Integrated Marketing System. We have suggested a Vertical Integrated Marketing System. The theoretical bases and assumptions have been taken from the Concept of Systems and Mattsson's concept of Institutional Integration. The latter requires that some kind of "institutional relations" which may be based on "ownership", "management participation" or a "written contract for a long-term co-operation". At least the ownership relation applies to our model because

all the business firms are state-owned. (Section 7–2).

We have assumed that certain facilities such as the establishment of better quality standards (Appendix B.), quality control measures at the purchasing stations and at the mill, storage, etc., are available to operate inventory stocks for current sales and buffer stocks for future sales. (Section 7-3).

The basic structure of the model consists of the farms, Rice Mills Unit, Ghana National Trading Corporation and Institutional Consumers. The model system is to be managed by a full-time centralized "Rice Administrative Board". The basic operational problem will be to formulate and implement strategies for marketing both local and imported rice over a period of time. (Section 7-4). The objective is to maximize the sales volume of local rice at the expense of imported rice. One of the many advantages is that the Ministry of Agriculture will be freed from the chores of daily operations of the intervention measures. The system will be able to operate "on commercial lines". A probable disadvantage is that improved quality may not result in cheap rice.

Chapter 8. Summary and Suggestions for Further Studies. The summaries are mainly comments on conclusions drawn from studying the problem of "no markets". I have also indicated some problem areas for further studies (Section 8-2).

2. Concepts and basic definitions

2-1. Overview

In this chapter we shall discuss intervention, interpret large-scale commercial rice production in terms of the concept of systems, and discuss the concepts of markets and marketing. We shall also define efficiency and conclude this chapter by discussing some of the implications of these definitions and concepts.

2-2. The Concept of Intervention

In the past the Government has played an active role in the functioning of the market for certain crops, such as cocoa. Two aspects of this role may be pointed out at this moment. First, intervention has been effected in response to demands from one or more interest groups in the society. Second, intervention has been initiated by the Government for developmental reasons, for example Esiama Rice Mill. In either situation, one can observe that specific needs have been translated into specific functional activities by managing a system of statutory agencies and a set of fiscal policies. Some of these statutory agencies have been the Cocoa Marketing Board and the Grains Development Board. Some of the fiscal policies were related mainly to guaranteeing, subsidizing and controlling prices along the distribution channel, levying of duties and taxes on certain imports.

In this case, intervention may be defined as a process whereby a Government can take certain timely actions in the market to help or coerce some of the interest groups in such a way, that, more desirable results in business or in terms of the system's performance can be achieved.

By this definition, intervention requires the following:

1. That the Government should have valid and useful information about the events which might have necessitated intervention. This includes identification of the groups or groups that ought to be helped or coerced to do what is expected of them. We can include the identification of the stages in the distribution system where intervention activities or measures would be needed.

2. That the collected information would be processed in order to define (i) what the substantive issues are, (ii) the various alternative actions that can be taken and (iii) the purpose each alternative action is to serve.

The importance of this requirement is that it will permit the Government to choose a few of the alternative actions which are related more to the central issues and the purpose. Also the costfactors should be specified as far as possible so that the chosen set of actions will have the highest probability of succeeding.[25]

3. That the Government and the chosen interest group should assume equal responsibilities for the chosen set of actions and their consequences.

This requirement may be related to how intervention measures are implemented.

And it suggests that the probability of success of the chosen set of actions will depend also upon the internal commitment of the interest groups in the system.[26] It seems realistic, as such, to assume that some knowledge of the Concept of Systems can be useful when implementing any intervention measures.[27]

2-3. Large-Scale Commercial Rice Production—a System's Interpretation

Sherman indicated that the 1968 conference was held to interpret large-scale commercial rice production in systems perspective.[28] At this conference a "programme" was adopted to attain self-sufficiency by 1972. Sherman considered the programme as system in which

> the agronomist, the fertilizer distributor and the marketing man must understand their interrelationships in order to proceed as a unit towards the common objective.[29]

From the same source, Sherman's system seems to have the following as its components:

(a) Production inputs: improved seeds, fertilizer and credit.

(b) Marketing: establishment of Regional Marketing Committees, the Food Marketing Corporation, price support program for rice, co-operatives and the interaction of these marketing forces.

(c) Rice imports.[30]

At the 1970 Conference on rice production many of the speakers considered a system as

(i) concerted action. This may be exemplified by Afful's suggestion that ". . . small-scale farmers should be organized around processing mills . . .".[31]

(ii) a list of certain components. Ghartey said that ". . . rice production does not only involve the complicated process of growing rice in the field but also includes research, marketing, processing, storage, price and import or export policies".[32] Tagoe's "comprehensive approach" defines the "production requisites" as being ". . . land clearing, inputs, processing, marketing, research and extension services".[33] Afful defines rice production as having ". . . several phases including cultivation, processing and storage".[34]

(iii) an institutional setting in Mark-Hansen's "vertical set-up for price stabilization".[35]

It seems that the authors were trying to be as practical as possible. But their interpretations do not specify whether the system they are describing concerns the entire rice industry or a segment of it. It is difficult to guess whether any meaningful application can be drawn from them. They seem to contradict each other.

In this research the system we are considering is the distribution channel designated for large-scale commercial rice production. Given the considerations discussed in Section 1 4, our system comprises a set of institutional relations which enable the interest groups to operate in such a way that a set of predetermined objectives can be achieved.

In this definition

1. *Institutional relations* refer to the (i) mechanism, e.g. different types of markets, price control or administration, which may be used by the interest groups for their

purposes; (ii) legalized relations which may indicate ownership, express co-operation or co-ordination among the interest groups, etc., and (iii) other actions which may be taken in the future to affect the structure of the system and the behaviour of the interest groups (see also Chapter 7).

2. *Interest Groups* represent three categories of decision making units, namely:

(a) *The Government,* which stands for the state as an entrepreneur and the various Government departments which are connected with the rice business.

(b) *Business Firms,* represent (i) commercial paddy farmers, (ii) Rice Mills Unit, (iii) Ghana National Trading Corporation, (iv) Agricultural Development Bank, etc. In Chapter 4 the term "business firms" will have other meanings which are specified in that chapter.

(c) *Consumers.* This term is used for both private and institutional buyers such as hospitals, schools, the army, prisons, catering and restaurants.

Other decision making units will be specified in their appropriate connection in the course of this report.

3. *Objectives.* The primary objective for the system is to produce and market rice in sufficient quantities and good quality so that there will be no need for its import. Other objectives of intervention have been specified in Chapter 5. These may be translated into goals which will be operational for the business firms. Some suggestions have been made in Section 2-5 below. We shall assume that consumers wish to buy nutritionally enriched rice with white appearance in sufficient quantity and at reasonable price.

4. Some of the *activities* which have to be performed in the system have been discussed in Appendix B.4. In order to avoid repetition, some of the resources which might be needed to execute those activities and factors which might limit performance have been discussed in Chapter 5.

2-4. The Concepts of Markets and Marketing

In the system we have just described, farmers can sell their paddy to the Rice Mills Unit at a guaranteed price per bag of 180 lbs. The act of buying and selling is a pair of the many business transactions which may take place within or outside the system. Transactions are made possible by the existing institutional relations of which the market is an element.

We shall think of the market as one of the institutional relations which enable the interest groups to transact varieties of businesses at different times and places.

There are two aspects of this definition that must be explained at this point.

The first one is that business transactions in or outside the market can be effected by other kinds of institutional relations. Two of the relations we have in mind now are administrative actions and political decisions. Transactions which are effected through administrative actions may take place within the business firms or the departments and ministries of the Government. The values of such transactions may not necessarily reflect market prices prevailing at the time. On the other hand market prices may be used for accounting purposes. Transactions effected through political decisions may tend to substitute or supplement business transactions in the markets. Examples of these kinds of business transactions can be price subsidization, food aid programmes and the administration of taxes and import duties, i.e. intervention.

Transactions through the markets, administrative actions and political decisions can be observed in the present rice marketing systems in Ghana. The situation may be explained by the growth of both private and government roles in the rice marketing systems.

The second aspect of the definition is that markets have to be created, developed and maintained over time. This requires complicated and deliberate actions from the interest groups within and outside the system. Many of these actions, like intervention, tend often to generate certain patterns of behaviour. We shall designate the term "marketing" to this pattern of behaviour.

In this context, marketing is the behaviour of the interest groups as regulators, buyers and sellers in the market, where they strive to achieve their objectives by performing certain business activities in many different ways (techniques).

In this definition of marketing, objectives, business activities and techniques constitute the primary instruments which are required by the executive or the manager of a business firm for making and implementing decisions (i.e. for taking actions). The following discussion provides an illustration of the concepts of markets and marketing.

Fig. 2 shows the operation of the concepts of markets and marketing. In this figure it is assumed that each of the three categories of interest groups, namely, the Government, the business firms and the consumers, uses the market in the pursuit of its objectives. The relation of each of the interest groups to the market may be summarized as follows:

On the selling side of the market a business firm's sales volume may depend on the product offer and the prevailing market conditions. The product offer is the result of using available stock of knowledge and the firm's production facilities to process and to develop a product, e.g. rice, and choosing some techniques for distributing its rice.

Let us substitute "customer" for "consumer". We will notice that, on the purchasing side of the market, apart from the prevailing market conditions, a customer's purchases can be determined by his predisposition to buy. This in turn, may depend on his taste and needs (preferences)[36], selection of supply sources and financial resources.

In the market the Government tries to administer certain regulations such as observation of standards, subsidization and control of prices.

The effects of these regulations and the interactions among sellers and buyers generate information on actual market situation. Each of the interest groups collect information about sales and purchase, prices and quantities of the available products, etc. This is communicated to the decision makers' stock of knowledge for assessing the degree to which objectives have been achieved. If the degree of goal fulfilment[38] is high

1. the manager of the business firm may take some actions to reinforce and to sustain performance
2. the customer will repeat his purchases
3. the Government is likely to behave as in point 1 above.

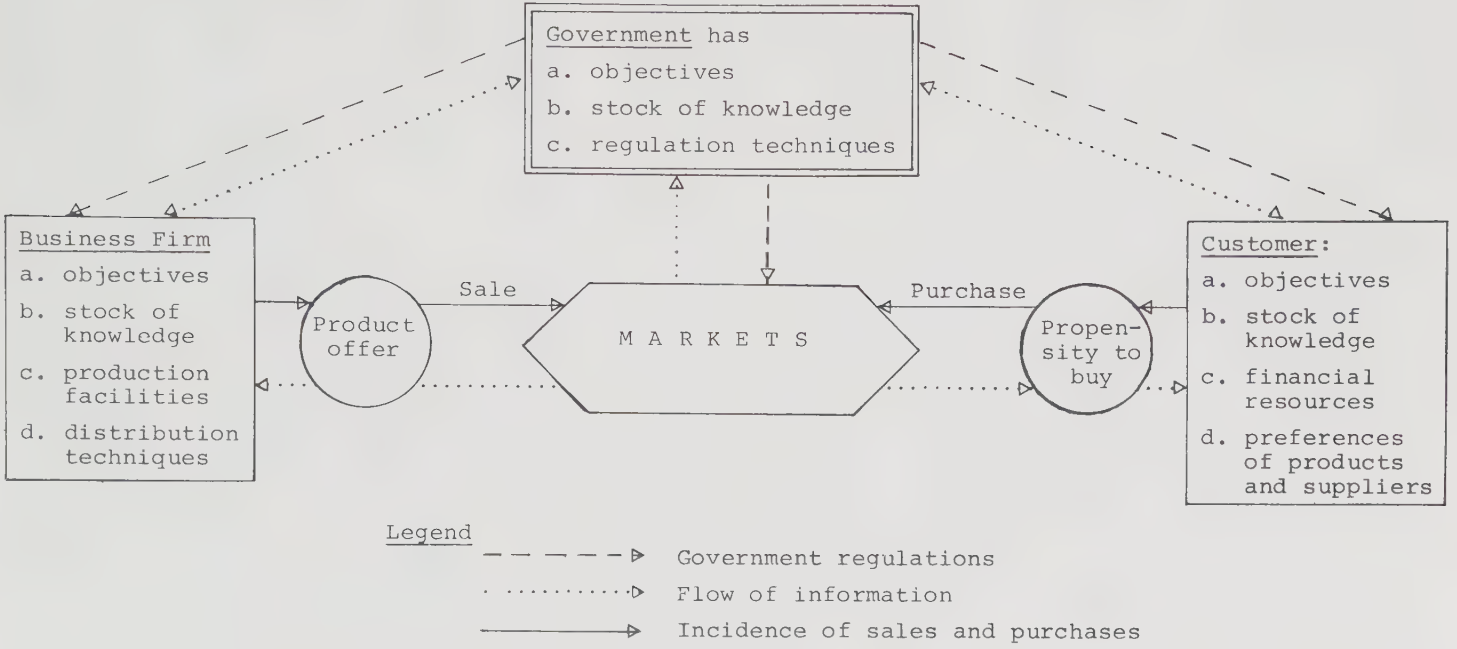
If the degree of goal fulfilment is low

(a) a different set of actions will be taken by the manager of the business firm to resuscitate performance

(b) the customer will most likely seek another source of supply, i.e. another firm which can supply his needs

(c) the Government may alter its regulations, coerce the business firm to improve

Fig. 2. Schematic Representation of the Markets



its business transactions or intervene in some way that may be politically advantageous.

It is obvious that this kind of process, so to speak, seems to be necessary and may be applied by any of the decision making units to regulate market conditions, safeguard his interest and to effect those changes in marketing that might be needed. Preston referred to this inbuilt feedback process as "market reaction". It means

> ... the sequential response of other marketing dicision-making units to actions taken unilaterally by any of them and to disturbances arising from other sources.[39]

We have thought of markets as an institutional relation which enables the interest groups to transact business as buyers and sellers. Marketing is the behaviour of the decision making units in the markets where they employ different techniques to perform certain activities which will enable them to achieve their objectives. Preston considers markets as "exchange relationships among buyers and sellers".[40]

In the Seven Year Development Plan a "market" was to be created by "setting up buying centres in production areas" to enable paddy farmers

> ... to sell within reasonable distance from (their) farms all (they) could produce—and at fair prices.[41]

The evidence also indicated that a "marketing organization" will be needed to do

> ... something more ... to obtain the confidence of the producer and to convince him ... that such a market really existed.[42]

The Plan indicated that

> ... a separate organization or division may be warranted to deal with (rice) marketing[43]

which meant, probably, activities connected with

> ... buying, handling, transportation ... (and the provision of) adequate market intelligence to ensure smooth channelling of supplies to consumers.[44]

Mark-Hansen's concept of "rice marketing" states that it

> ... starts from the moment the farmer puts the seed into the ground to the time when the wife's delicate fingers have turned the clean rice into an appetising delicious dish ready to serve on the dining table.[45]

Two other concepts of marketing which have some relevance to this research can be mentioned at this point.

In his discussion of some marketing problems in Ghanaian agriculture, La-Anyane considered marketing as being

> ... those activities involved in the flow of goods and services from the point of initial agricultural production until they are in the hands of the ultimate consumer.[46]

"Those activities" referred to in this definition have been cited in Appendix B.4.

From the literature on marketing we may cite McInnes's definition of marketing which states that it is

> ... a force required to bridge a separation—in space, time perception, valuation and ownership—between makers and users of economic goods ... and to realize opportunity latently existing in the market potential.[47]

Preston's concept of markets is closely related to the one we have adopted for this research. The Plan's concept of markets may be related to the principle that markets

ought to be created and developed. But its application was limited to the paddy farms and the Rice Mills Unit segment of the distribution channel we have been considering. It regarded rice markets as separate entities from paddy markets. In our concept, all the markets that can be found in the distribution system (and, practically, in the entire marketing system for food) are related to each other via what Preston has succinctly described as the "market reaction" process within the concept of marketing.

The marketing concepts postulated in the Plan and by Mark-Hansen, La-Anyane and McInnes differ from each other in terms of the degree of the specificity or generality of the problems the authors were studying at that time. This factor may explain why marketing is a "force" (McInnes), a set of "activities" (La-Anyane, Plan) and a "behaviour" (in our concept). Mark-Hansen's definition may be related to the temporal and spatial extensions of the market.

Inspite of these differences in approach to marketing as a concept, they are related in some ways. Each of them states some kind of

1. objectives such as

(i) assuring the existence of markets for paddy farmers as well as smooth channeling of rice to consumers (Seven Year Development Plan).

(ii) bridging separations and realizing opportunities in the market (McInnes).

(iii) generation of flows, which is explicitly stated in La-Anyane's, but may be implied in Mark-Hansen's.

2. transactions as activities in the Plan's, La-Anyane's, Mark-Hansen's and implied, perhaps, by the term "force" in McInnes' definitions.

3. orientation, namely, segmentation of the channel into aggregate markets (as in the Plan), segmentation of markets (McInnes) and channel orientation (La-Anyane and Mark-Hansen).

In this way, we can say that the other concepts are related to one or two of the elements, namely, objectives, business activities and techniques, in our concept.

2-5. Evaluation of Performances of the System and/or its Components

In the concepts of markets and marketing we discussed, tangentially, how each of the interest groups evaluates its performances. In order to determine the efficiency of the system or any of its components we need to follow certain prescribed procedures. In this section we shall consider three of such procedures, namely, performance standards, measurement and forecasts and actual evaluation.

a) Performance standards. In principle these are the objectives which are expected to be achieved over a given period of time. Let us assume that

(i) the Government wishes the system to attain self-sufficiency in the quantity and quality of rice to be sold at controlled prices. Other objectives can be read in Chapter 5.

(ii) the business firms wants to maximize their profits. Normally, there are other objectives, like distribution costs, market share and stock-out rates which a firm may want to minimize or maximize.

(iii) the consumer wants to buy rice which has an appealing (white) appearance, less broken kernels and inedible objects, and, which may be bought at a reasonable price (or at controlled price).

b) Measurement and forecasts. We will assume that the above-mentioned objectives can be measured in monetary (and other quantitative) or qualitative terms of which some have been suggested in Appendix B.2. Forecasts are considered in this context as the values of objectives that may be achieved in any future point in time.

c) Actual evaluation. This procedure requires that we compare the values obtained from forecasts with actual values of current performance to determine

(i) if the objectives are currently being met or if they are expected to be met at some future time. Here we want to know the degree of goal fulfilment, that is, efficiency of the business firm or the system. If the term "degree" is measured in percentile units or on a scale of zero-unity (0-1), efficiency will be high as the value of the "degree" approaches 100 or unity.

On the measurement of marketing efficiency, La-Anyane suggested that a "relative scale rather than an absolute scale" should be used.[48]

(ii) the extent to which a chosen method or technique for executing a task fosters the achievement of the goals. By this criteria we shall determine how effective the chosen technique has been or could be.

It follows that the system or any of its components is efficient if it fulfils certain claims made upon it by one or more interest groups in the society. On the other hand, a technique is effective if, and only if, there is no other better way of executing a given task. Thus if the evaluation of forecasts and current values of performance indicate any significant deviation from the performance standards, it would suggest the existence of a problem which should be identified for further actions to be taken.

2-6. Implications of the Concepts and Definitions

The concept of markets has been graphically explained in Fig. 2. Its meaning is then extended over vertical markets which forms a distribution channel. We have described this channel as the system for large-scale commercial rice production. In this system there are certain institutional relations which enable the Government, the business firms and consumers to act and influence (or transact business with) each other in different ways so that certain objectives may be achieved. We designated the term "marketing" to this pattern of behaviour.

An essential aspect of marketing is that each of the interest groups strives to obtain an adequate knowledge of the conditions of sales and purchases and for the earliest intimation of any change.[49] The acquired knowledge may be used by the

1. Government to intervene whenever this is desirable and by the
2. business firms and the consumers to increase their chances of making profitable sales and purchases.

It follows that market-making activities (see Appendix B.4), that is, the creation, maintenance and the development of markets, will depend substantially on using the knowledge acquired on the preferences of consumers, competitive actions, product attributes, etc. over time. This may reduce or rule out the probability that a "no market" situation will occur in any foreseeable future time.

But, when resources are scarce acquisition of knowledge over time can be rather expensive. Hence certain interventionary measures, such as the provision of research services and intelligence on the supply and demand conditions, may be needed to reduce distribution costs.

Sellers and buyers may publicize the availability or the scarcity of paddy, rice, production inputs, premises for storing, wholesaling, retailing, etc. There may be "no market" for sellers or buyers, if for some other reasons, some business firms in a given geographic area have no information about paddy or rice supplies which may be available somewhere, e.g. in the Northern and Upper Regions of Ghana.

An important inference that can be drawn from the concepts, especially, of markets and marketing is that the interest groups in the system learn from their market experience, including the experience of not being able to sell or buy at guaranteed or controlled prices, and may try to adapt their behaviour accordingly.

3. Rice and its importance

3-1. Overview

In this research a product may mean paddy, local and imported rice. In the documents on rice production, the term "rice" has been used to mean both paddy and rice. Paddy is a farm product which has to be milled to obtain rice. We shall use this distinction, that is, paddy is a farm product and rice is a product of the milling firm.

In this chapter we shall discuss the characteristics of rice and its importance to the consumers, the traders and the Government. We have assumed that, by discussing these questions we may get some preliminary insights into the "no market" problem.

3-2. Characteristics of Rice found in Ghanaian Markets

In Ghanaian markets one can find both local and imported rice.

3-2.1. Characteristics of imported rice

Imported rice is raw-milled. It has a white appearance which has sometimes been emphasized by passing the kernels through nutritionally enriched solutions. This technique imparts extra whiteness to the kernels. The whitish appearance has been the standard measure of quality and nutritional value among consumers.

Imported rice has long- and medium-grained, slender, sometimes translucent, kernels. They separate freely when boiled or cooked. It is highly valued in Southern Ghana where, as a result of a long period of trade with some of the European countries, consumers have acquired a special taste for it.

3-2.2. Characteristics of local rice

Before intervention, local rice normally contained kernels of varying size and colour. Local rice can be raw-milled or parboiled-milled. Parboiled rice is preferred more by consumers in Brong-Ahafo, Northern and Upper Regions of Ghana. In Southern Ghana raw-milled rice is more preferred.

This may indicate that consumption of a given type of local rice was restricted, somehow, to the geographic region where it has been processed. Inspite of this restriction some quantities of both types of rice were often found in many urban and feeder markets.

3-3. Importance of Rice

The importance of rice may be described in terms of the relationships which may exist between some of the attributes of the products and certain demands of the interest groups in the system.

3-3.1. To the consumers

Rice has become important to the consumers because it is easy to keep at home for a long period of time and can be cooked at any time. It has a natural taste and can fill the stomach without making one feel particularly heavy.[50] This factor seems to have much significance in the consumers' protein-calorie needs.

Grist has shown that, on average, a given variety of rice may contain about 80 per cent of carbohydrates and about 9 per cent of proteins. Minerals and vitamins constitute the remaining 11 per cent.[51] Florence Sai's study on the nutritive values of some tropical fruits and vegetables indicated that one pound (about 450 gr.) of cooked rice can yield about 1690 calories.[52] This is roughly 95 per cent of the daily calories (about 1880) actually consumed by the average Ghanaian.[53] This shows that the nutritive importance of rice is due mainly to its high content of carbohydrates.

Rice has become important also as a result of high rates of urbanization (about 12.8 per cent per annum) and population (about 3 per cent per annum) growth. The per capita consumption of rice in 1973 was about 22 lbs. (see Appendix A.2). Rice consumption has been about 20-25 per cent of urban household food purchases.[54] In urban areas consumers have become more and more dependent on purchased foods. This has been made possible by the opportunities they have to increase their money income in the booming industrial urban areas.

3-3.2. To the traders

Rice has been important to traders, millers and farmers, in the sense of offering job opportunities, for using human and material resources which would otherwise have remained unemployed. That is why it is widely grown, milled and distributed in Ghana.

It has been a profitable enterprise for those who have produced and traded in local as well as imported rice in Ghanaian markets. The size of imports may indicate its importance to the traders as well as to the Government.

3-3.3. To the Government

Rice has been essential also from the point of view of the Government, which has to ensure that the markets provide an adequate and regular supply of rice and other foodstuffs for the growing population.[55] It is believed that the quantity of local rice sold every year was not sufficient to cope with the rapidly increasing demand and rising prices of foodstuffs, including rice. Large imports of rice had to be effected to alleviate food shortages which were becoming apparent in some urban areas during the 1960s.

As indicated in Appendix A.1, import statistics reveal that the value of annual rice imports have increased steadily. It was little over 4 million cedis during 1957-1962, and reached about 5 million cedis during 1963-1968, and over 7 million cedis during

1969-1973. In general, rice imports appear to have claimed an average of about 11 per cent of the total annual food imports.

Imported rice has become an important political factor in sustaining governmental influence on many economic activities and on other business transactions in the country. It seems that this factor had tended to determine the integrity and, in part, the survival of any post-independent Governments. In 1972, the Deputy Chief of Information Officer remarked that

> some Ghanaians had developed such tastes for foreign goods that the popularity or otherwise of past Governments had invariably been determined by their availability.[56]

It seems that each of the four Governments[57] the country has had since independence has, in one way or another, provided funds for the importation of foods which were labelled as "essential commodities".[58] For instance, in 1973, the National Redemption Council voted a subsidy of 23 million cedis

> to ensure the flow of certain foreign commodities which Ghanaians have become accustomed to and which they use as yard-stick for measuring the success of any Government.[59]

3-4. Some Aspects of the "No Market" Situation—A Hypothetical Explanation

The relatively short discussion we have followed in this chapter has shown that rice has been essential in the behaviour of the consumers, the business firms and the Government in different ways.

The hypothesis is that the nature of the different ways which have made rice important to each of the interest groups could be in conflict and that this conflict may explain certain aspects of the "no market' situation. Conflict is necessarily a problem that requires some kind of solution. The choice of the solution may depend on the nature of the problem.

There is an indication that rice is widely produced and marketed in Ghana. Given the size of the imports, we may suggest that the supply of local rice has often lagged behind the total demand for consumption. Reusse has considered this as having been a "great challenge"[60], perhaps, to the marketing system as well as to the Government.[61]

We can assume, therefore, that, the primary problem of the "no market" situation seems to be the inability of the extant marketing systems to equilibrate the supply of and the demand for local rice. And that, this seems to have been a generic problem with a long history.[62]

The interest groups can be related to this problem in several ways of which the following are discussed below:

1. On the demand side, the evidence presented in this chapter seems to suggest the following: (i) As rice is consumed with little or no modification, the size of the kernels, its general appearance, cooking qualities and taste[63] could be the most influential factors on consumer preferences. (ii) Consumer preferences are strongly entrenched. It is also most likely that these factors will affect the supply of both local and imported rice.

2. On the supply side we may want to know how the business firms had organized

the marketing of both local and imported rice prior to Government intervention. (We shall discuss this in Chapter 4).

3. The Government can also be related to this problem through its decision on, for example, whether the country should depend on food imports or whether it should be self-sufficient in certain foodstuffs, including rice. At this point the evidence suggests that rice imports were once considered a temporary stabilization measure.[64] However, it seems that, in the course of time, this function has developed into a political force which has tended to undermine the integrity and the survival of any post-independence Government in the country. In this respect, Government intervention may be regarded as a logical outcome of the "no market" problem. (We shall discuss this in Chapter 5).

4. Pre-intervention marketing organizations

4-1. Overview

The marketing of rice prior to Government intervention covers a period of five years, from 1958 to 1962. Twenty five of those whom I interviewed felt freer to dispense with information that would probably have no immediate negative effects on their current activities. This chapter is devoted to describing the types of distribution channels which the business firms employed in the marketing of both local and imported rice. We shall also discuss some of the marketing activities they performed and relate these activities to the "no market" problem. In the concluding section we shall discuss some aspects of the traders' demands for improved marketing facilities.

4-2. Organizations of the Marketing Systems

The marketing system may be divided into two distinct channels, namely, Indigenous Distribution and Expatriate Marketing Systems. These distribution channels are shown in Fig. 3 which was drawn on the basis of information I obtained from my interviews.

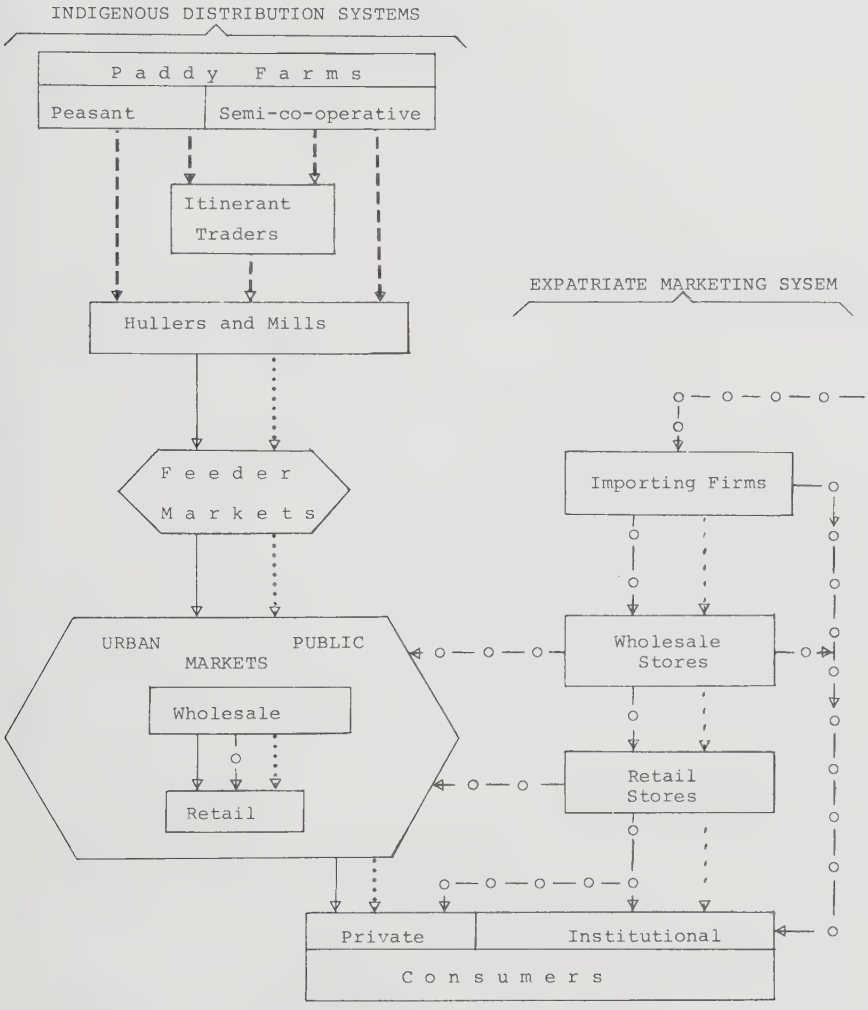
If we compare Fig. 3 with Fig. 2 we may notice that the feeder and urban markets (Fig. 3) are but two types of the market envisaged in Fig. 2. The business firm in Fig. 2 can be any one of the firms, stores (of the Expatriate Marketing System), paddy farms or mills (of the Indigenous Distribution System). Given the stage in the channel any of the business firm and the consumers in Fig. 3 may be customers (as indicated in Fig. 2) to one or more firms of the Indigenous Distribution System and or firms and stores from the Expatriate Marketing System. Since the role of the Government was limited to the issuing of import licences, it is eliminated in Fig. 3. In the following sub-sections we shall discuss the structures of the distribution channels, costs, margins and prices. We shall also describe some of the techniques which have been used in rice marketing and their relation to the "no market" problem.

4-2.1. Indigenous distribution system

This channel consists of several distribution channels which often involved semi-co-operative groups and a host of unit peasant farmers and traders. As indicated in Fig. 3, however, the Indigenous Distribution Systems can be divided into six stages, with a change in ownership of the product (rice or paddy) taking place often, between the stages. These stages also form the bases for a chain of markets through which paddy or rice was sold and bought.

The first stage consists of the farms which grow and harvest paddy. The next stage

Fig. 3. Pre-intervention Marketing Systems for Paddy, Local and Imported Rice During 1958-1962



involves the movement of paddy from the farms to processing centres, storage and millers and hullers. The third stage includes the movement of rice from the processing centres to the Feeder markets.[65] The fourth stage consists of transporting rice from feeder markets to urban markets, where regular wholesaling and retailing activities are transacted. The fifth stage encompasses the purchases and movement of rice between the retailers and the consumers.

The movement of paddy and/or rice through the Indigenous Distribution Systems can be described as follows:

The general practice was to begin selling paddy soon after harvesting. Except a retention of about 5 per cent by 10 of the 15 farmers interviewed nearly all the surplus paddy were sold out within six months after harvest.

In 1962 unit farmers supplied about 85 per cent of paddy. Groups of farmers which functioned as semi-co-operative organizations sold 15 per cent of the paddy output for that year. Between the farms and the nearest Feeder Markets of any importance paddy and rice were sold, processed, hulled or milled and transported through three distribution channels. The first one can be described as

FARMS → ITINERANT TRADERS → HULLERS → FEEDER MARKETS → URBAN PUBLIC MARKETS → PRIVATE CONSUMERS

Two of the 9 farmers had normally used this channel. Two of the other 6 farmers maintained that the importance of this channel to their semi-co-operative organization depended on the members' immediate need for money. Even then, only a certain proportion of the groups output was sold through this channel. Itinerant traders were often the residents of the same or nearby villages and towns. There were other itinerant traders who came from distant places to buy paddy from farms, milling centres and in Feeder markets for resale elsewhere. Local itinerant traders purchased paddy which they stored for an average of three weeks before selling. Four of the itinerant traders bought paddy and other farm produce which were offered to them by the farmers. Three itinerant traders and 6 unit farmers parboiled their paddy before milling. There were instances when some farmers by-passed the itinerant traders. But this action was taken only when they could do so, i.e. they had to consider the load to be carried, the distance to be travelled, other tasks that has to be performed on the farms, etc. Three of the farmers claimed to have sold substantial amounts of their paddy outside their semi-co-operative groups, because they felt that they were being cheated.

The second distribution channel can be described as

FARMERS → MILLERS → FEEDER MARKETS

In this channel unit farmers and or farmer-groups performed the processing of paddy. They bore the cost of processing and milling. Two farmer groups and 4 unit farmers had their own hullers. After milling they sold the rice in Feeder Markets or in urban wholesale markets.

The third distribution channel can be represented as

FARMERS → FEEDER MARKETS

It seems that this channel was used for selling paddy from the farmers to traders in the Feeder Markets. Those who used this channel believed that this meant better chances of making better transactions.

From the Feeder Markets paddy was moved into processing centres to be milled. Rice was then distributed through an average of three Urban Wholesale Markets to urban retail traders.

In Urban Wholsale Markets, 2 of the respondent wholesalers distributed both local and imported rice, one other specialized in the distribution of local rice and a third sold only imported rice. Wholesalers, who sold imported rice, obtained their supplies from the local branch stores of expatriate chain-store organizations, like, the United Africa Group of Companies in Accra, Agona Swedru and in Kumasi.

Two of the 6 wholesalers are women.[66] One female and 3 male wholesalers used to visit different wholesale and periodic markets for their supplies of local rice in Ashanti, Western and Eastern Regions. Two others operated a chain of resident agents in Feeder Markets. Most of the wholesalers kept and maintained permanent stalls in the markets of the towns, like Tamale, Accra and Kumasi, where they normally lived. Rice was stored under tapauline-covered sheds, in open places near the stalls or somewhere in the market place and in their homes, if unused spaces were available.

Retailing has been an exclusive occupation for the resident female traders in Urban Public Markets. In these markets traders are grouped according to the types of products marketed. Retailing of rice has always been separated from the stalls or places where wholesalers transacted their business. Of the 14 respondent retailers, 7 sold only local rice, 3 more sold both local and imported rice and 4 others sold only imported rice. They obtained their supplies from wholesalers within the Urban Public Markets and from the wholesale stores of the Expatriate Marketing Systems.

4-2.2. Expatriate marketing systems

Foreign firms which were operating in the Expatriate Marketing System used to import rice from such countries as Britain, Italy and Luxembourg. Imported rice was then marketed, as shown in Fig. 3, through three distribution channels:

1. their own
2. distribution channels owned by other foreigners or Ghanaians
3. buyers for institutional consumption.

For an illustration let us recount the information on imported rice marketing as was practised by the United Africa Group of Companies in 1959.[67]

An official of the company believed that about 20 per cent of their rice import was sold to institutional consumers and about 15 per cent of the remaining quantity was sold to other marketing stores. Of the remaining 65 per cent, about 30 per cent was sold through their own wholesale stores to passbook[68] holders from the Indigenous Distribution Systems. The other 35 per cent was retailed unconditionally in the grocery sections of their department stores.

4-3. Prices, Distribution Costs and Margins

In the Indigenous Distribution Systems, a unit trader often calculated his price by simply adding a certain margin to total average costs per unit of sale. This may be expressed as follows: Price = Total average costs + margin.

We can illustrate this technique of pricing from Tables 1 and 2. A processor's selling price of 6 cedis 55 pesewas per bag of 100 lbs. was made up of (a) paddy price—4.50, (b) processing and distribution costs—1.50 and a margin of 55 pesewas.

Table 1. *Selling Prices of Traders and Business firms for 100 lbs. of local or imported rice distributed through the marketing systems in 1960.*

	Indigenous Distribution Systems		Expatriate Marketing Systems	
Selling price of the	Cedis	Percent	Cedis	Percent
1. Farmer	4.50	33.58	—	—
2. Processor	6.55	48.88	—	—
3. 1st. Trader	8.10	60.44	—	—
4. 2nd. Trader	9.70	72.38	–	-
5. 3rd. Trader	11.40	85.07		
6. Importer	—	—	10.90	76.49
7. Wholesaler	—	—	12.35	86.66
8. Retailer	13.40	100.0	14.25	100.00

Sources: Appendices A.3 and A.4

It was believed that this calculated price was often lower or higher than the price prevailing in each market at the time of transactions. Such variations in prices often led those, who were willing to transact business, into series of bargaining over actual sales prices. Price bargaining occurred in varying scales in all markets along the distribution channels. In general one can assume that the bargaining price in a given market is high at the beginning of the day's marketing activities, but may fall gradually during the day.

In such markets prices were affected by several factors. It was generally believed that the actual price at which a bag of paddy or rice was sold depended upon the level of the calculated price, the time during the day, the traders' bargaining competence, the stocks available for sale and the traders' willingness to bargain and transact a business.

In Expatriate Marketing Systems, prices were set, for the first time by the importing firms. And the principle by which the price per unit of sale was determined appeared to have been the same as indicated earlier, namely, average costs plus a margin.

Table 2 shows the distribution of costs and margins among traders from the Indigenous Distribution and Expatriate Marketing Systems. In the Indigenous Distribution Systems the processor's total distribution costs of 1 cedi 50 pesewas was about 50 per cent of the total channel cost of distribution and about 11 per cent of the retail price. Except for the first trader's distribution costs of 55 pesewas, the other traders' individual distribution costs were below 40 pesewas. In this particular year, 1960, the processor's margin of 55 pesewas was about 9 per cent of the total channel margin, which was 5 cedis 90 pesewas.

In the Expatriate Marketing Systems, the importer's total distribution costs of 4 cedis 65 pesewas was about 85 per cent of the total channel distribution costs and

Table 2. *Costs and Margins of Traders and Business Firms for 100 lbs of local and imported rice distributed through the marketing systems in 1960.*[1]

Costs and margins of the	Indigenous Distribution Systems		Expatriate Marketing Systems	
	Costs	Margin	Costs	Margin
1. Processor	1.50	0.55	—	—
2. 1st. Trader	0.55	1.00	—	—
3. 2nd. Trader	0.35	1.25	—	—
4. 3rd. Trader	0.30	1.40	—	—
5. Importer	—	—	4.65	1.20
6. Wholesaler	—	—	0.30	1.15
7. Retailer	0.30	1.70	0.55	1.35
Total	3.00	5.90	5.50	3.60

Sources: Appendices A.3 and A.4.

[1] In this table cost data do not include the price of paddy or the fob price of imported rice.

about 33 per cent of the retail price. The costs of distribution at both the wholesale and/or retail stages of the channel were respectively less than 60 pesewas. The importer's margin of 1 cedi 20 pesewas was about 33 per cent of the total channel margin of 3 cedis 60 pesewas.

If we compare the two distribution channels the following characteristics may be observed:

1. The number of stages and therefore, markets, within the Indigenous Distribution Systems are more than in the Expatriate Marketing Systems. This may suggest lower specialization and concentration of activities in the former than in the latter. This may affect the length of the respective channels and, perhaps, the degree of consumer coverage in a given geographic area, prices, costs and margins.

2. The structure of prices, costs and margins seems to reflect the structure of a given distribution channel.

3. Margins at each stage of the channel seem higher in the Indigenous Distribution System than they were in the Expatriate Marketing System.

In the next section we shall discuss the types of techniques used by the traders to achieve their objectives.

4-4. Marketing Techniques Used

Traders from both channels were known to have pursued a large number of objectives, of which profit came first. Profit is thought to be the income which a trader receives over the costs of distributing a given type of rice or performing a given type of activity.

Traders from the Indigenous Distribution System measure rice with "bowls" of different sizes and weight, "kerosene" tins, "cocoa" bags and "cigarette" tins.

Bulk purchases were measured with three different "bowls". Let us describe them as

"Bowl-30", "Bowl-35" and "Bowl-40", where the figures 30, 35 and 40 are the number of bowls that can fill a "cocoa" bag. The Normal weight of such a bag of rice is about 240 lbs (110 kg). Therefore Bowl-30, Bowl-35 and Bowl-40 will weigh about 8, 7 and 6 lbs respectively. The same bag can be filled with 7 "kerosene" tins of rice. Each "kerosene" tin weighs about 33 lbs or 15 kg, when filled with rice.

The standard unit of sale at the retail stage of the channel has been a "cigarette" tin, which weighs about 11 ozs or 300 gr. Each of these units of sale had its own price.

In order to translate, for example, the profit objective into prices and to effect a transaction at the same time, it was a common practice (and still is) for the traders to pad the bottoms of the "kerosene" or "cigarette" tins. This practice often reduced the quantity of rice that went for a given price.

To effect transactions a trader might keep the price slightly higher than the prevailing average market price and then add small quantities of rice to the standard quantity of sale. Sometimes these "additionals" were specified prior to the conclusion of a transaction at the going price. Otherwise a buyer might insist on more of the "additionals" the quantity of which the seller reduced each time. By this technique a buyer might "gain" about 2 kg of rice more on the standard quantity of 15 kg at the wholesale and about 70 gr more on the standard retail quantity.

In the Expatriate Marketing Systems the operation of passbook systems enabled some of the firms to maintain a sizable clientele of loyal customers. It is belived that this technique allowed the foreign firms to sell other merchandise which otherwise was difficult to get rid of.

4-5. Some Aspects of the "No Market" Problem

We can infer from the above discussion that some aspects of the "no market" problem could have been caused by certain characteristics of the extant marketing systems.

1. It may be said that the design of the organizational structures and institutional relations prevailing in the Expatriate Marketing Systems seem to have promoted the use of passbook and import licences to the advantage of the foreign firms. It was generally believed that the foreign firms possessed unrivalled expertise in servicing consumer preferences. In this respect two of the disadvantages of the passbook system can be pointed out here: (a) It tended to draw a large proportion of both traders and consumers away from patronizing local rice. (b) and it enabled the foreign firms to control the flow of imported rice into the marketing system in general, and, particularly, into the Indigenous Distribution Systems. There seems to have been an awareness of the political consequences in creating shortages of any kind.[69] Two Commissions of Inquiry[70] have reported the misuse of import licences: (i) import licences were sometimes used for purchasing anything but those "essential commodities" for which the licences were issued[71] and (ii) that such abuse of imported licences might have contributed to the "temporary shortages of certain essential commodities in the country".[72]

2. The organizational structures and the existing institutional relations of the Indigenous Distribution Systems may be said to have added, substantially, to the "no market" problem. It seems that the number of traders and the organization of their marketing activities replicated the pattern of production and consumption.

(I) On the supply side, production of rice has been carried out on small scales by a

large number of unit farmers in almost every region in Ghana. Among the most influential factors of their production were ecological limitations (rainfall, low yield seeds, variable fertility of soils), the Government's emphasis on export crops, such as cocoa, and the inadequate marketing services they have been receiving.[73]

(II) Consumers were also scattered. They bought small quantities of rice at a time and more frequently in a given market.

(III) In order to serve both the farmers and the consumers, the traders have had to travel long distances to collect rice into economic sizes and distribute them in small units of sale. In performing bulking and bulk breaking activities traders were often hampered by many factors of which lack of information on supplies of local rice, competition from imported rice, inadequate storage and transport facilities were the most important. On the other hand many of the traders seemed to operate on the assumption that, by using certain marketing techniques, sales revenue could be increased in the long run, with little or no change in the quantity of rice actually distributed, the structure of costs, etc. Manipulations of marketing techniques contributed, probably, to fluctuations in the price and the quantity of rice actually marketed. For one thing, the importance of "additionals" to transactions could make the recording of the price and the quantity of rice in a given market a difficult task. For another thing the recordings of this nature might be of little use for developmental purposes.

(IV) The Indigenous Distribution Systems had been labour-intensive because people found it easy to trade, wished to be on their own or that employment opportunities were generally scarce. There has been evidence of mistrust among traders in allowing any long-term groupings or co-operative activities to occur. In these circumstances, it is difficult to imagine that any one or any group of traders could influence such factors as the structure of the channel, its institutional relations, prices or quantity of rice, for a very long time. While the interaction of the above-mentioned situations seemed to have aroused some discontent among the farmers, traders and consumers regarding business prospects and rising prices at the beginning of the 1960s, the rice business was attracting some politicians and especially, the Government.[74]

To capitulate on this section we may say that the important aspect is that the flow of local rice and other facilitating services seems to have been slackened by certain structural and institutional factors. So that, while the Expatriate Marketing Systems distributed imported rice, the Indigenous Distribution Systems marketed, mostly, local rice, which, incidentally, was not marketed by the foreign firms.

4-6. Demands for Intervention

In view of the general discontent which was prevailing during this period, some of the farmers, traders and consumers were asked in my interview about what they did to improve their situations. Answers to this question are as follows:

1. Twelve of the 20 respondent consumers replied that there were demands for an adequate and regular supply of good quality rice and other foodstuffs at low prices.

2. Eight of the unit farmers and 4 of the farmers who had been members of semi-co-operative groups and 18 of the traders interviewed replied that they turned to the Central Government for some assistance. They regarded the patronage of the

Government as indispensable to the growth of the rice business and to the "realization of their aspirations for a better standard of living".[75]

They were further asked about the nature of the assistance they sought from the Government.

The farmers replied that there were demands for cultivational assistance in technical matters such as improved seeds, fertilizers and other farm inputs at subsidized prices, provision of extension services, etc.; raising the price of paddy by about 30 per cent and the provision of guaranteed markets for their paddy.

The traders replied that there were demands for more efficient milling and improved marketing facilities. Some of the marketing facilities requested from the Government were: an increase in the number of rented stalls in Public Markets, on improved standard of hygiene in the markets, a reduction of stall rents and market fees. There were demands that foreign firms be prohibited from operating in retail markets and from the importation of certain "essential commodities", including rice.

3. Other kinds of assistance which were asked for by both farmers and traders are as follows:

a) Transport facilities were asked for by 20 of the traders and 10 farmers. These included demands for improved motorized roads and for the construction of feeder roads to connect farms to milling centres and Feeder Markets.

b) Eight of the farmers and 15 of the traders interviewed replied that storage facilities in the Public Markets were also asked for.

c) Almost all the farmers and the traders expected the Government to provide banking services and low interest loans.

As a final question in the interview, they were asked how they managed to have their demands presented the Government. The semi-co-operative groups of farmers directed their demands either to the District or the Regional Commissioners. Ten traders and 8 unit farmers claimed that they had access to some influential persons, most of whom were politicians. On this point, Esseks indicated that Ghanaian businessmen had sufficient access to decision makers in the Government.[76] It was, therefore, not difficult for some traders to obtain a hearing before a policy maker.[77] Ten of the interviewees, both farmers and traders, claimed to have used devious methods, which they declined to specify.

It is not far-fetched to assume that the nature of these and how they were presented called for certain actions to be taken by the Government. On the other hand, it is also possible to assume that, if intervention had been contemplated by the Government, then these demands would have had secondary importance for policy making and its implementation.

5. Government intervention

5-1. Overview

In this chapter we shall discuss the Esiama Rice Mill as an historical example of such intervention and explain the causes of the renewed interest in the 1960s. The main purposes of this chapter are as follows: To describe the nature of intervention measures and how they were implemented at the system level and at the milling firm level. We shall conclude our discussion by pointing out some of the factors which might place some limitations on the performance of these intervention measures.

In Chapter 2 we defined intervention as a process whereby a Government can take certain timely actions in the market to help or coerce some of the interest groups in such a way that more desirable results in business or the system's performance can be achieved. In the past such interventions were implemented by managing a system of statutory agents. An historical example is the Esiama Rice Mill.

5-2. The Esiama Rice Mill— A Historical Example

The Esiama Rice Mill was built in 1924 in the Western Region.[78] But it went into operation in 1926. The main objective for this intervention was that the Government wanted to

> . . . stimulate swamp-rice industry of the coastal areas of the Western Province . . ..[79]

because, it was known that

> . . . the colony imported some 10,000 tons of milled rice annually.[80]

Management of the Mill. From 1925 to 1939, the Mill was managed by the Department of Agriculture. In 1929 the Government thought of selling it to the Government of Sierra Leone, because the Mill could not achieve its objectives. This decision could not be realized. In 1936 the United Africa Trading Company considered, but was not able to take over the Mill. During 1939–1948, the Western Province Commissioner took over the management of the Mill. But its daily operations were supervised by the Office of Political Administration.[81] After 1948 the Department of Agriculture again assumed responsibility for Esiama Rice Mill. An attempt was made to revive farmers' interest in co-operation by setting paddy price at 56 per cent of recovery rate, which was rather low.

Marketing Arrangement. The only information available on the Mill's marketing activities is that

> Rice was disposed to firms which in many cases advanced money with which farmers were paid.[82]

There is no indication of the firms which advanced money for the purchase of paddy and for the "disposal" of rice. But, by virtue of their interest in the Mill, we may assume that the United Africa Company could have been one of them.

Forward selling was a fairly common marketing technique in those days. By this technique some farmers and retail firms were tied to the Mill. In spite of this arrangement the Mill had considerable difficulties in staying in business. In his report on the Mill's activities during 1937-1939, the Director of Agriculture made the following remarks:

> Considerable difficulty was experienced in marketing the product, and, the output of the mill was much in excess of the demand, owing to the increasing preference for imported polished rice.[83]

The Mill was consequently closed down in 1952.

After this experience we may ask why should the Government be asked to intervene in the production and marketing of rice? We may also want to know the causes and the effects of intervention on a large scale. The aims of intervention and how they were implemented are discussed below, but the effects will be discussed in Chapter 6.

5-3. Reasons for Renewed Intervention

Intervention might have been affected by the demands of the consumers, the traders and the farmers (Section 4-6, Chapter 4). However, there is evidence to suggest that intervention had been considered for some time.[84] Some of the factors which motivated intervention are discussed below.

(1) There was a general belief that Indigenous Distribution Systems were not adequately organized to meet the demands of rapidly growing urban consumer demand.[85] Such beliefs appear to have been supported partly, by the frequent shortages of rice and other foodstuffs in urban areas. It was understood that the strong urban demand, especially in the South, for imported rice was going to sustain inflationary pressures on prices for a long time. And this has meant that relatively high imports of rice would have to be maintained as well.

(2) The Government became more concerned about high levels of rice imports. During 1957-1962, the value of rice imports averaged about 10.5 per cent of the annual average value of the balance of payment deficits.[86]

(3) The continued existence of expatriate business firms in the marketing system was thought to limit the opportunities for developing Ghanaian and Governmental entrepreneurship. For one thing, proliferation of consumer preferences for good quality rice involved innovations in product management and distribution techniques which only few foreign firms could provide.[87] For another thing, foreign firms were believed to have devised various means which permitted them to create shortages and increased the scarcity values of rice.[88]

(4) Rice was considered to be one of the import items for which self-sufficiency could be attained in a short period of time.[89] It was believed that rice could provide the basic nutritional requirements such as calories. Furthermore, rice is easily stored and transported. "It grows best in those areas of Ghana where it is most important to raise incomes and standards of living".[90] The Government was convinced that the demand for rice "will increase faster, as incomes rise in the country", than many other

foodstuffs from the forest zone.[91] It was also thought that it could contribute to ameliorate the balance of payment deficits.[92]

5-4. Intervention Objectives

Intervention objectives for the rice project can be paraphrased as follows. They sought to

(1) achieve and maintain self-sufficiency in the production and marketing of rice. That is to say, total demand for rice ought to be met from domestic production in the shortest possible time. The Seven Year Development Plan envisaged increases in output by large scale farmers from 7,500 tons in 1964 to about 63,000 tons by 1970.[93] In 1968 a programme was proposed to attain self-sufficiency by 1972.[94]

(2) maintain a maximum number of farmers in commercial rice production and to guarantee them relatively stable incomes within each crop year and between crop years.

(3) improve efficiency in rice marketing and to maintain a minimum number of small scale private businessmen in the rice marketing system.

(4) raise and diversify nutritional levels of the average consumer. Objective (1) is related to the "immediate objective of providing enough food to feed the people" and to reduce the country's dependence on imported foods.[95] This objective has been one of the priorities in Government agricultural policies since 1957. The other objectives viz, (2), (3) and (4) have been emphasized in many expedient policies. For instance, the current agricultural policy aims at strengthening "facilities for food marketing in the country".[96]

5-5. Implementation Measures

In order to carry out these objectives, it was considered necessary to stabilize prices along the channels for rice distribution. The price mechanism seemed the easiest to manipulate to bring large payoffs fairly quickly. In principle, prices can be stabilized in many ways of which the following may be considered.[97]

(1) Organization and administration of marketing services without fixing prices. This method involves operating a chain of statutory agents to hold buffer stocks, regulate imports and to divert excess supplies to other uses. It also seeks to encourage the formation of co-operative marketing organizations. Stabilization funds are needed for purchasing, researching and promoting new markets, establishing and enforcing quality standards, etc. Two of the probable advantages of this method are that (a) prices can be prevented from rising above or falling below, e.g. 20 per cent of a chosen guaranteed level and (b) that the bargaining power of both farmers and consumers can be strengthened in relation to the distributors.

(2) Fiscal methods, such as subventions or deficiency payments, may be applied so that no special actions would be taken directly against prices from rising above or falling below, e.g. 20 per cent of a chosen guaranteed level. Like the first method stabilization funds will be required to support payments of any shortfalls from the guaranteed level. An optional measure is that a ceiling may be stablished to check or

control prices from escalating, for example 10 per cent more than the 20 per cent limits below or above the guaranteed level.

(3) Consumption of local rice may be stimulated in many ways.[98] This method requires sufficient information about consumer tastes and buying habits, reorganization of channel structures, activities and improvement of retail techniques such as new packages, adoption of different, but convenient, package sizes to suit buying patterns, etc. In this way it may not be necessary to reduce or stabilize prices.

It may be noticed that the choice of any of these three methods would require an organizational framework and operational policies as we have stated in the concept of intervention and in the above-mentioned methods.

In the following sub-sections we shall discuss implementation in terms of the organizational structures and institutional relations (i.e. market making functions) at the level of the system and the milling firm (Rice Mills Unit).

5-5.1. At the system's level

Implementation at the system's level means that the chosen measures were injected at the various stages of the distribution channel. We shall relate our discussion to the farming, milling, importation and consumption stages of the system. We will conclude this section by analyzing the market-making functions within the system.

Farms. The evidence indicate that four of the state farms[99] were heavily subsidized. They were relatively well equipped to cultivate paddy, process it and market the milled products.[100] The government also initiated and financed co-operative mechanized farms, especially, in Northern and Upper Regions.[101]

Milling Firms. Fifteen mills were imported from West Germany at the beginning of 1964 by the erstwhile Ghana Farmers' Co-operative Council. Eight of them were installed at or near paddy farms. These milling firms were sufficiently financed to buy and process paddy from both the individual and co-operative farms.[102]

The Importing Firm. Towards the end of 1961, a series of administrative, monetary and fiscal measures were also introduced into the supply and marketing of imported rice.[103] The Ghana National Trading Corporation was set up to enable the Government "to counteract the country's extreme dependence on foreign firms"[104] and to participate seriously in trade.[105] Monopoly rights were granted to the Ghana National Trading Corporation to import and market a wide range of staple commodities[106], including rice.

Consumption. Information on consumption, especially the nutritional values of products, had been hard to obtain. However, some evidence suggests that the quality of consumer diets was to be improved through the National Nutrition Board. For instance, the protein consumption of 42 gm per day was to be raised to about 70 gm, while the daily calorie intake of 1800 was to be increased by 900 calories a day.[107] The Government assumed that increase in domestic supply of rice and fish would permit substitution, as far as possible, of the contribution now made by imported rice and other foodstuffs.[108]

Market-making Functions within the system. In the concept of markets we stated that the markets are an important element of the institutional relations within the system. The interest groups in the system normally express their behaviour through markets. In operating the intervention measures, the milling firms appear to offer immediate and guaranteed markets for farmers' paddy.

Rice from the milling firms was distributed by a Division of the erstwhile Ghana

Agricultural Produce Marketing Board. It seems that the Board's marketing activities were concentrated on a segment (the Public Markets) of the Indigenous Distribution Systems. Later the Government considered establishing a separate organization to deal with rice and other cereals.[109] In 1965 the Food Marketing Corporation was established to provide "ready markets" and to manage guaranteed minimum price scheme for paddy and other cereals.[110] Under the guaranteed minimum price scheme, paddy farmers were paid a fixed price, per each crop season, for a bag of 180 lbs (about 82 kg) of paddy. After 1966, the Food Marketing Corporation began to concentrate its activities on maize.

The Ministry of Agriculture assumed the responsibilities for purchasing paddy. In 1968 the Ministry considered establishing a system of 16 paddy buying stations around the country. As the Tamale Rice Mill was then the only one of the milling firms in operation, the Ministry decided to locate those buying stations in Tamale area.[111] In the same year a Rice Marketing committee was established to manage paddy purchases, resuscitate fledgling milling firms, including the Tamale Rice Mill and to organize the sale of rice from these milling firms. A large proportion, about 70 per cent, of milled products appeared to have been sold directly from the firms to local rice traders.

The available information suggests that the activities of the Rice Marketing Committees have been financed from both governmental and private sources. For instance, in 1968, the Northern Regional Marketing Committee drew an overdraft of 20,000 cedis from Standard Bank of West Africa to purchase an alleged estimated stock of 15,500 tons of paddy in both the Northern and Upper Regions.[112] In 1969/70 crop season, the Ministry of Agriculture allocated 300,000 and 150,000 cedis to Northern and Upper Regional Marketing Committees for the marketing of rice.[113] Although the Agricultural Development Bank has been extending loans to the farmers over the past five years, it began to finance the marketing of rice only after 1972.[114]

In order to protect the market from excessive competition, quantitative restrictions and a duty of about 78 cedis per ton (3.5 pesewas per lb) was imposed in December 1961 on imported rice.[115] And to stimulate consumption of local rice the operation of guaranteed minimum price scheme was supplemented with a system of price control at both the wholesale and retail stages of the distribution channel.[116] But in July 1967, when the currency (cedi) was devalued by about 30 per cent, the tariff on imported rice and 5 per cent of the sales tax were eliminated. Internal control price was also reduced by about 10 per cent. Two years later, 1969, a duty of 2 cedis 50 pesewas per 100 lbs (about 45.5 kg) was imposed on imported rice.[117]

The above description seems to indicate the availability of institutional relations and organizational structure which might be needed for the successful implementation of intervention objectives. But in the course of time, it became known that certain paddy farmers and/or milling firms, especially the Tamale Rice Mill, had experienced some difficulties in selling their paddy or rice. Since the milling firms have been the markets for paddy farmers, it is necessary and important to discuss implementation of the Government intervention at the level of the milling firms.

5-5.2. At the level of the milling firms

As was mentioned in Section 5-5.1, on arrival from West Germany, 8 of the 15 Hensatta mills, well equipped with parboiling facilities were installed at Adidome,

Fakpoe, Atebubu, Tamale, Yendi, Bolgatanga, Bawku and Wa.[118] The Tamale Rice Mill was one of the milling firms that managed to survive.

Management of the Rice Mills Unit. As an example, the Tamale Rice Mill has been managed by Civil Servants who had been appointed, from time to time, by the Ministry of Agriculture. It has been managed by the defunct United Ghana Farmers' Co-operative Council (1964–1966), the Ghana Cocoa Marketing Board (1966–1967) and the Northern Region Rice Marketing Committee (1968–1970).[119] At present, the Mill is one of the 7 state-owned milling firms operating under *The Rice Mills Unit*, which seems to have relatively well-trained managerial and executive personnel.[120]

At the inauguration of the Rice Mills Unit in 1970, the management was asked to operate "on purely commercial lines".[121] The management had also the task of reactivating all the idle mills and to improve the quality of rice produced by them. The third management task was that it should

> . . . purchase and store large quantities of paddy produced by farmers, mill and distribute the finished products through various market channels to consumers.[122]

Paddy Purchases. The Rice Mills Unit has been buying and paying guaranteed price for the paddy supplied mostly by private commercial farmers. From the Unit's records, it seems that an average of about 15 per cent of its paddy needs was bought on the Unit's premises. The remaining 85 per cent of the purchases was made through buying stations. Some of the Technical Officers of the Ministry of Agriculture have been employed temporarily as purchasing agents at a nominal commission of one pesewa per bag of paddy.[123] By this arrangement the Unit seems to provide and continues to provide a steady market for the farmers.

Milled Products. The Unit replaced parboiled rice, which had been produced by the Tamale Rice Mill, with raw-milled rice. The Unit's rice is sorted into four grades. The standard unit of sale had been 240 lbs (about 110 kg) per bag until 1970, when the 100 lb (45,5 kg) unit of sale was introduced. Bran and husks have been the by-products of the milling activities. Bran is bagged into standard weight of 120 lbs, while paddy husk for example, at the Tamale Rice Mill is left in small heaps at one side of the premises of Tamale Rice Mill.[124]

Sales Arrangement. Each of the milling firms used to sell its rice to local market traders and other wholesale-middlemen. Towards the end of 1967, Eberhard Reusse, a FAO Agricultural Economist, suggested to the management of Ghana National Trading Corporation about "the possibilities of establishing purchasing activities through its sales depot at Tamale".[125] The suggestion was accepted in principle but not in practice.

The Unit's Customers. In order to determine the structure of the Unit's customers a sample of 200 buyers were asked by me whether they had bought rice from the Tamale Rice Mill during 1970, 71–1972 73. The results of the 116 buyers who replied are shown in Table 3 below. It indicates a preponderance of institutional buyers. This category of customers was about 66 per cent of those who answered. Forty four per cent of this figure, a rather large proportion, was a category comprising Government departments and officials. Private consumers and traders from the Indigenous Distribution Systems constituted about 21 and 13 per cent, respectively, of the total respondents.

The Structure of the Distribution Channel. The distribution channel in which the Rice Mills Unit has been operating is schematized in Fig. 4. It consists of farmers,

Table 3. *The Structure of Tamale Rice Mill's Customers from a Sample of 116 for the period of 1970/71-1972/73.*

No.	Type of Customer	No. in Sample	Percentage
1.	Government departments	33	28.5
2.	Private consumers	24	20.7
3.	Government officials[1]	18	15.5
4.	Private traders	15	12.9
5.	Schools	13	11.2
6.	Hospitals	12	10.3
7.	Canteens	1	0.9
Total respondent		116	100.0
Sample total		200	

Source: Personal Interview data.
[1] These are Civil Servants working in the Northern Region.

purchasing agents, milling firms, an ad-hoc marketing agent and the customers.[126] The flow of both paddy and rice may be summarized as follows:

1. On the supply of paddy, the Unit buys farmers paddy at guaranteed price through a system of 14 buying stations which are staffed by personnel from the Ministry of Agriculture. About 80 per cent of the Unit's paddy purchases came by this channel in the crop year 1971/72. The remaining 15 per cent of its paddy needs were supplied by farmers to the premises of the milling firms.

2. On the sale of milled products, the milling firms, e.g. Tamale Rice Mill, distributed its rice through

(a) its sales office from which private traders and consumers could buy up to 5 bags of rice.

(b) an ad-hoc marketing committee (which was appointed by the Ministry of Agriculture) to service the institutional buyers. For 1973/74 crop year, the Logistic Commission has been appointed to distribute all the rice produced by the Rice Mills Unit.[127]

5-6. Constraints on Intervention

Constraints can be seen as limitations on the freedom of actions. In this respect the actions of the Government, the business firms and the consumers may be constrained by such factors as (i) the political consequences of Government policies, (ii) competition, nature of demand, available foreign exchange and (iii) the effects of ecological factors and technological innovations.

Political Factors. In general, Government policies tend to provide laws and regulations (organizational structures and institutional relations in the concept of the system, (see Chapter 2) by which market transactions can be actualized. For example, the operation of guaranteed prices at the farm—Rice Mills Unit segment of the system, the operation of control prices at both the wholesale and retail segment for both local and imported rice are policies designed to influence market transactions.

The political consequences of such a situation may depend on the extent and nature of representation enjoyed by the businessmen in Government decision making structures. In the short run, it may affect the quality of the choices the Government could make. In the long run the fragmented structure and the size of intervention can be a test of the Government' political fortitude and administrative capacity.

Economic Factors. Among the factors discussed here are competition, demand and the availability of foreign exchange.

Competition. This factor can be an aspect of the political consequences of creating uncertainties in market behaviour. In this sense, the statutory agents, private firms, etc. will compete[128] for

a) scarce foreign exchange to finance imports of (i) rice for direct distribution or (ii) inputs to operate the intervention measures.

(b) import licences, e.g. among the Ghana National Trading Corporation and other business firms.

(c) the sale of both imported and local rice, e.g. among Ghana National Trading Corporation and the Rice Mills Unit and private business firms.

(d) the control of the distribution channel

(e) adequate share of the distribution facilities to support their business transactions.

Competition may tend to limit (i) the availability of markets for some business firms and (ii) the choice of available products consumers could make. Given the nature of import and exchange controls, the consequences of such competition may bring to question the efficiency of the Government's entrepreneurship.

Demand. Given the nature of competition, the demand for farmers' paddy may be limited by the operation of the guaranteed price, purchases of Rice Mills Unit and conditions for loans from Agricultural Development Bank. A farmer who would like to capitalize on the better opportunities being offered on the open market may find himself unable to do so. The consequences of this situation can be predicted: The farmers may refuse to sell to the Rice Mills Unit at the guaranteed minimum price and complain of "no markets" or they may indulge in black-marketing and smuggling which has been stimulated by the nearfamine situation in the Sahelian countries of West Africa.

The Rice Mills Unit's paddy purchases may depend, among many factors[129], on the size of its share of the rice markets and the performance of its rice in the markets. As consumer demand show strong preference for imported rice, which is readily available, the market share of the Rice Mills Unit cannot be large enough to make it profitable. A considerable amount of efforts may have to be expended to stimulate demand for rice from the Rice Mills Unit.

Foreign Exchange and Trade Deficits. Imports of rice for sale or inputs to operate intervention measures require foreign exchange which had virtually been exhausted by the beginning of 1966. Deficits in current visible external trade had been rising and the earning capacity of the export sector of the economy has also been affected by falling world prices. In view of this dwindling foreign exchange, that part of intervention which depended on imports will be difficult to realize.

Ecological Factors and Technological Innovations. Ecological factors as water, viability of seeds, soil fertility, incidence of plant diseases and insect infestation can reduce the output of paddy or decrease the quantity of stored rice. For instance, insect infestation and discoloration of kernels through biochemical processes can affect quantity, quality and, therefore, the market value of stored paddy or rice. Thunder

storms, which break out in the Northern and Upper Regions at the time of harvesting, can destroy crops. Torrential rains of the forest areas of Ashanti and some parts of the South can render roads impassable. Such natural factors can in many cases generate some risks for all the interest groups considered in the distribution channel. If such risks occurred, they could alter market conditions and the behaviour of the interest groups.

Technological innovations such as those discussed under implementation, were introduced to mitigate, in some way, the effects of these ecological factors. Hybrid seeds, like C4.63, which can resist many plant diseases, and respond favourably to fertilizers under natural supply of rains, have been introduced in the North. In order to realize the potentialities of these innovations, there will be the need for both intensive and extensive management practices which have not been easy or cheap to come by. At present a large proportion of the needed innovation inputs have had to be imported. It may be noticed that, even if there were no restrictions and controls, import may be constrained by lack of foreign exchange and chronic trade deficits.

5-7. Conclusion

An earlier intervention measure, the Esiama Rice Mill, was limited to the milling stage of the distribution channel. The Esiama Rice Mill served as a market to encourage farmers to grow swamp rice. The Mill had to dispose of its product to firms which often advanced money for the purchases of paddy from the farmers.

In the late 1960s, the Government initiated several projects at such stages of the distribution channel as the farm, milling and importation of rice for sale in Ghana. Tamale Rice Mill, one of the 7 milling firms of the Rice Mills Unit, was to buy farmers' paddy at guaranteed price. Rice was to be sold through various market channels to the consumers.

Given the structure of the system of intervention measures and the nature of policies designed to facilitate their operations, certain political, economic and ecological factors may affect their performance. In the long run time is an important constraint to consider. It causes fatigue and decay. By its very nature the system of intervention measures can be organizationally entropic. It may be suggested that the conferences which were held in 1968 and in 1970 were connected with this factor.

We shall analyze the effects of intervention in the following chapter.

6. Effects of intervention

6-1. Overview

In the previous chapter we discussed some of the many measures of intervention in the production and marketing of rice. We shall analyze the effects of intervention on the organizational structures of the distribution channels in the marketing system, the performances of paddy farmers, the Rice Mills Unit, etc. and the extent to which other intervention objectives had been achieved.

The importance of this chapter is that: (1) It will enable us to examine the extent to which intervention had either contributed to or been successful in solving some of the "no market" problems. (2) It may also indicate some of the current important problems which would require further actions to be taken.

For the sake of convenience, this chapter will be discussed as follows: In Section 6-2 we shall analyze the effects of intervention on the general structure of the marketing system and the flows of paddy or rice among business firms which had been operating in state-owned distribution channels. The performance of farmers, the Rice Mills Unit as a market for paddy farmers and as a supplier of rice in the wholesale market will be analyzed in Section 6-3. This will be followed by the analysis of the effects of intervention on the "no market" problems, Section 6-4. We shall conclude this chapter by discussing the extent to which other intervention objectives have been achieved. Some of the suggestions which were discussed at the 1970 Agricultural conference on Rice Production will be indicated for further considerations.

6-2. Changes in the Structures of the Marketing System

In this section we shall analyze some of the changes which had taken place in the general structures of the marketing system and the effects of intervention on the movements of paddy or rice among different markets in the system.

Import licensing and tight exchange control during 1960-1965 seemed to have undermined the role of both private Ghanaian and foreign businessmen in the marketing system.[130] The operation of the state-owned Ghana National Trading Corporation in the importing, wholesaling and retailing of rice (and other consumer goods) seemed to have foreshadowed "a discouraging future for the private enterprise of any size".[131]

The Ghanaian Business (Promotion) Act of 3 July 1970 empowered the Government to forbid ". . . foreign ownership of wholesale or retail trading firms with a turnover of less than 500,000 cedis".[132] And Sections 14 and 15 of this Act forbade aliens[133] to take part in any market or petty trading.[134]

These and other policies which we have discussed in Chapter 5 seemed to have reshaped the institutional relations and the structure of the trading system.[135] Some of the most probable effects on general structure of the marketing system which needs mentioning are as follows.

(a) Some of the private business firms were compelled to close down and/or withdraw from either wholesaling, retailing or both. The National Liberation Council's decree of 31 December 1968 is believed to have caused the termination of 202 business firms in April 1969.[136] Such foreign private firms as the United Africa Company, the Société Commerciale de l'Ouest Africain, the Compagnie Française de l'Afrique Occidentale and G. B. Ollivant, Ltd., withdrew from retailing.[137]

(b) A sizable number of the remaining private business firms, both Ghanaian and foreign, considered it necessary to adopt new business techniques. For instance, the firms we have mentioned above begun to operate commission stores, on which they had no effective control.[138]

(c) Ghana National Trading Corporation begun to expand its operations. And by 1969, it had a chain of about 350 retail stores throughout Ghana.[139]

(d) Changes in the structure of the marketing system can be pointed out by comparing Fig. 4 with Fig. 3. First of all each of the figures show two separate distribution channels: Indigenous Distribution and a Modern[140] Marketing Systems.

Comparison shows that the relatively simple structure of the pre-intervention Indigenous Distribution Systems, has, in addition to the traditional distribution channel, four more distribution channels. Using the milling stage of the channel the new channels in Fig. 4 are

(i) the state or Government operated marketing systems. These consist of (1) the channel in which the Rice Mills Unit has been operating and (2) State Farms Corporations.[141]

(ii) Formally organized co-operative societies and

(iii) a private, Ghanaian-owned distribution channel in which Mencilo Rice Mill, a private milling firm in Tamale, operates.

State Farms and Co-operative Organizations mill their own paddy. Mencilo Rice Mill processes paddy from both the private farms and from its own farms at Yapei, 25 miles south-west of Tamale. These milling firms distribute their products through Sales Agents (Fig. 4), which sell directly to the final buyers or through private stores from the modern marketing system.

An important characteristic of the Indigenous Distribution Systems is the growth of illegal export of both paddy and rice by some of the itinerant traders.

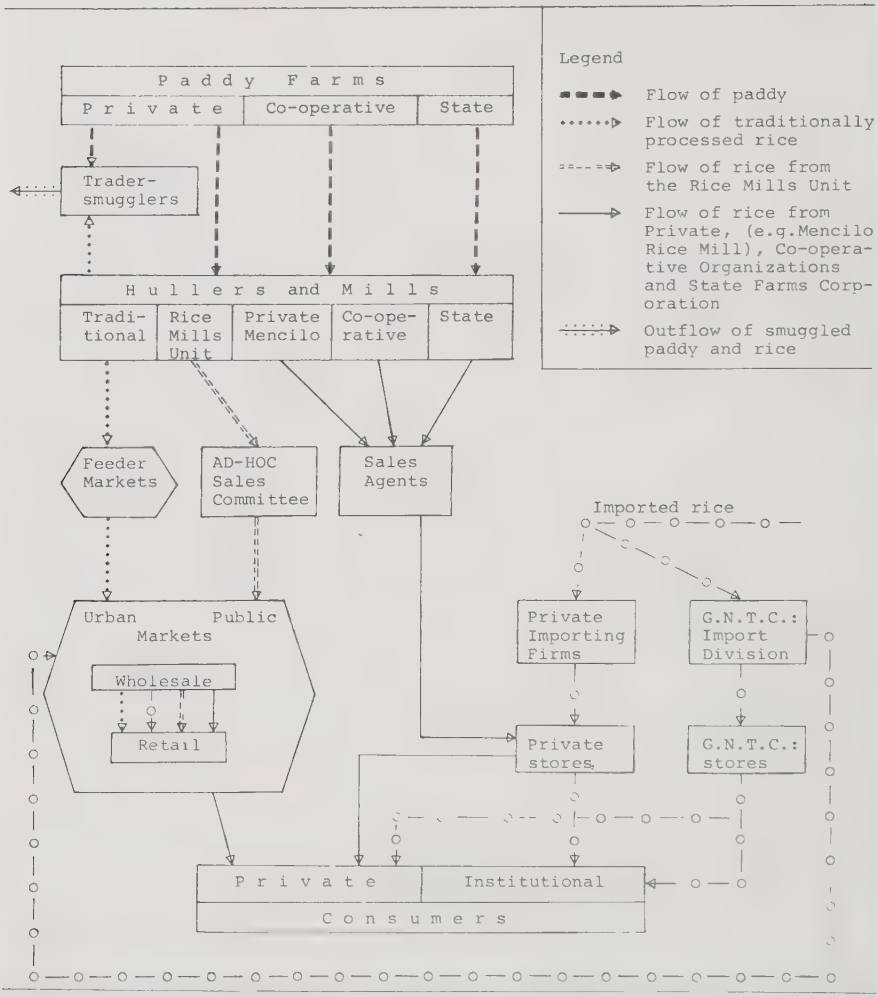
As indicated in Fig. 4 the channels for distributing imported rice have also undergone significant changes. The most noteworthy ones are

(a) the state-owned Ghana National Trading Corporation which imports and distributes about 75 per cent of the total volume of imported rice in the country. From its wholesale stores imported rice is sold to traders from the Public Markets, to private stores and to institutional consumers. Its retail stores serve some of the traders from the Urban Public Markets and private consumers.

(b) and the private distribution channels, which consist of both foreign- and Ghanaian-owned firms. Some of these firms import rice for distribution through private stores to the consumers and some of the traders from the Urban Public Markets. Sales are also made directly to the institutional consumers.

These changes seem to have had tremendous impact on the movement of rice

Fig. 4. A Simplified Diagram of the Marketing System for Paddy, Local and Imported Rice for the Period February 1963 - February 1974



between the producing areas of the Northern and Upper Regions and the consuming areas of other regions in the country. The effects of intervention on the movement of rice have been schematized in Fig. 5 below.

6-3. Effects on the Performance of the Business Firms Operating in the Channels Controlled by the Government

In this section we shall discuss the effects of intervention on the output of paddy,[142] on the performance of the Rice Mills Unit in relation to other business firms and on other objectives of intervention.

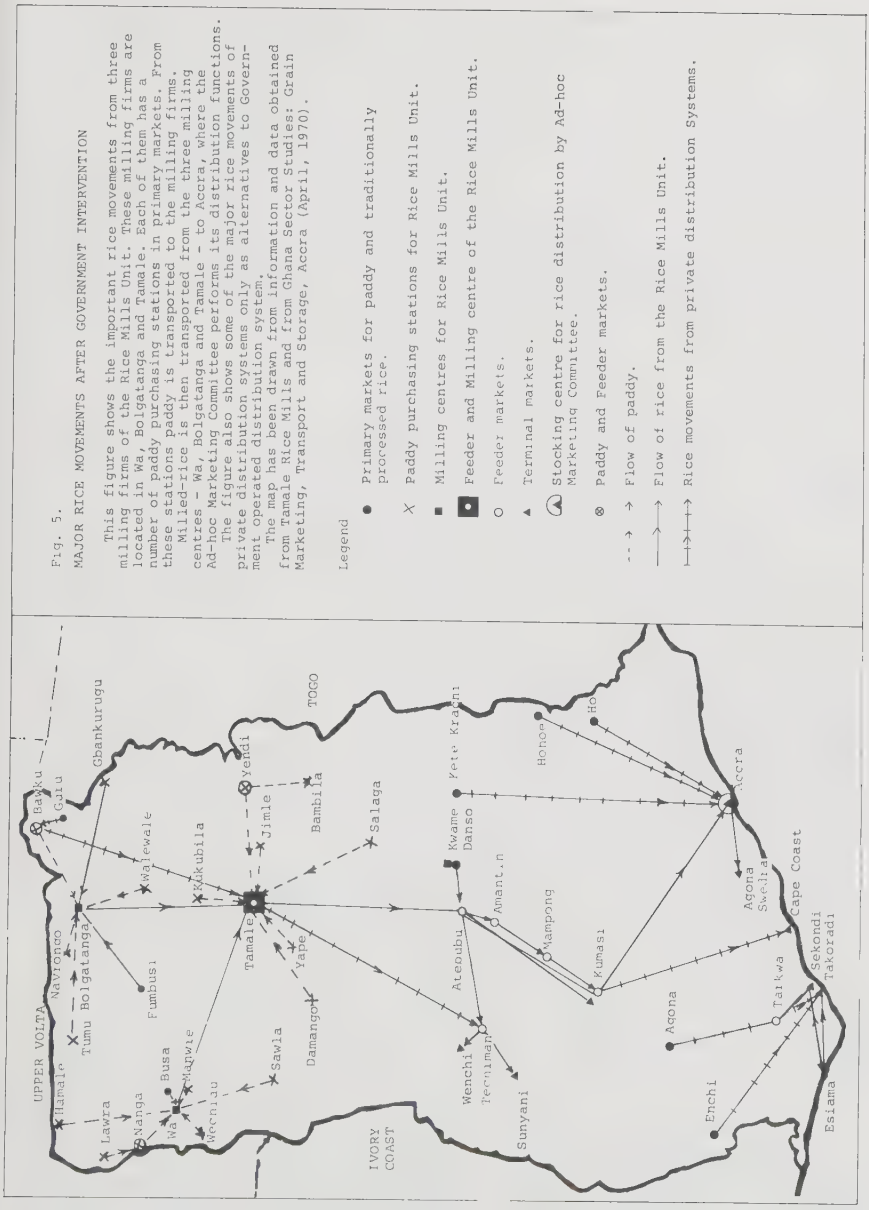


Fig. 5.
MAJOR RICE MOVEMENTS AFTER GOVERNMENT INTERVENTION
This figure shows the important rice movements from three milling firms of the Rice Mills Unit. These milling firms are located in Wa, Bolgatanga and Tamale. Each of them has a number of paddy purchasing stations in primary markets. From these stations paddy is transported to the milling firms. Milled-rice is then transported from the three milling centres - Wa, Bolgatanga and Tamale - to Accra, where the Ad-hoc Marketing Committee performs its distribution functions. The figure also shows some of the major rice movements of private distribution systems only as alternatives to Government operated distribution system.
The map has been drawn from information and data obtained from Tamale Rice Mills and from Ghana Sector Studies: Grain Marketing, Transport and Storage, Accra (April, 1970).
Legend
Primary markets for paddy and traditionally processed rice.
Paddy purchasing stations for Rice Mills Unit.
Milling centres for Rice Mills Unit.
Feeder and Milling centre of the Rice Mills Unit.
Feeder markets.
Terminal markets.
Stocking centre for rice distribution by Ad-hoc Marketing Committee.
Paddy and Feeder markets.
Flow of paddy.
Flow of rice from the Rice Mills Unit.
Rice movements from private distribution Systems.
UPPER VOLTA
IVORY COAST
TOGO
Navrongo
Bawku
Gaiu
Chankurugu
Tumu
Bolgatanga
Yendi
Jimle
Bambila
Salaga
Kwalewale
Kukubila
Fumbusi
Tamale
Yape
Damango
Sawla
Lawra
Nanga
Busa
Wa
Wechiau
Wenchi
Techiman
Sunyani
Atebubu
Kwame Danso
Amant.n
Mampong
Kumasi
Pete Krachi
Hohoe
Ho
Accra
Agona Swedru
Cape Coast
Sekondi Takoradi
Agona
Tarkwa
Enchi
Esiama

6-3.1. Farm output

Column 9 of Appendix A.5 shows that the total net paddy output in the Northern and Upper Regions increased from about 23,000 bags in 1962/63 to about 192,000 bags in 1972/73. In other words, paddy production rose by about eight fold during that decade. Increases in paddy output have been attributed to the adoption of recommended hybrid varieties of which C4.63, IR.5 and IR.20 (foreign varieties), Gona, Alupi and Palawan (local varieties) are examples. Other contributory factors

have been increased acreage under paddy, application of large quantities of fertilizers and new, improved, farm management techniques.

The output of the three categories of farmers, namely co-operative, small- and large-scale, is shown in Table 4 below. It indicates that the annual output of each category of farmers has been increasing in absolute terms. The situation is different when relative shares are considered. For instance, between 1962 63 and 1969/70, the percentage share of small-scale farmers in the total output showed an upward trend, but the share of both large-scale and co-operative farmers showed a decreasing trend. While the share of small-scale farmers dropped from about 67 per cent in 1969/70 to about 46 per cent in the following crop year and then begun to rise, the share of large-scale farmers increased from about 22 per cent to about 44 per cent and then begun to drop.

6-3.2. Purchases of paddy by the Rice Mills Unit

In terms of intervention, only private (small- and large-scale) farmers were to sell their paddy to the Rice Mills Unit. The rest of this analysis will be devoted to the effects of the Rice Mills Unit on the market for paddy and on the quantity of marketable local rice. Data on the Rice Mills Unit's paddy purchases and milled products for three crop years are given in Table 5.

It can be observed that the Unit's paddy purchases increased from about 6,400 bags in 1967/68 to a little over 54,000 bags in 1970/71, and then fell to about 36,000 bags in 1972/73. These purchases were respectively about 14, 42 and 19 per cent of the total average net output of the private paddy farmers. It seems apparent that the Rice Mills Unit has not managed to provide an adequate market for all that the private farmers could sell. Superficially, this seems to confirm the complaint of "no market" for farmers. On second thoughts, the "no market" at this phase of the distribution channel reflected conflicting interests of the farmers and the Rice Mills Unit.

My investigations revealed that some of the farmers are willing to sell to the Rice Mills Unit provided the relative margin between the guaranteed minimum price and the prevailing market price was not more than one cedi. Other aspects of the complaint were related to the inconveniences caused by the purchasing procedures

Table 4. *Paddy Output by Type of Farmers for 1962/63–1972/73*

Crop	Small-scale		Large-scale		Co-operative	
Years	1000 bags	% of total	1000 bags	% of total	1000 bags	% of total
1962/63	11.85	47.9	6.50	26.2	6.40	25.9
1966/67	41.25	63.2	15.50	23.8	8.50	13.0
1969/70	60.00	66.7	20.00	22.2	10.00	11.1
1970/71	70.50	45.9	67.50	43.9	16.60	10.2
1971/72	89.00	47.3	80.00	42.6	19.00	11.1
1972/73	118.00	52.4	86.00	38.2	23.00	9.4

Source: Ministry of Agriculture, Economics and Statistics Division, Accra, February 1974 (working paper). Data include paddy for "own consumption". Total output for each is given in Appendix A.5, Column 9.

Table 5. *Quantity, Price and Sales Value of Milled Products from the Rice Mills Unit for 1967/68, 1970/71 and 1972/73.*

Products	Weight per bag (lbs)	1967/68[1] Quantity (bags)	Price per bag[3] (₵.p)	Sales value (₵)	1970/71[2] Quantity (bags)	Price per bag (₵.p)	Sales value (₵)	1972/73[3] Quantity (bags)	Price per bag (₵.p)	Sales value (₵)
Paddy	180	6,400	6.20	396,800	54,375	8.00	435,000	35,000	10.00	350,000
Rice:										
Grade I	100	1,975	7.50	23,250	22,997	11.00	252,967	14,839	16.00[4]	237,424
Grade II	100	1,254	6.00	13,020	14,993	8.00	119,944	20,455	12.50	255,688
Grade III	100	667	5.50	6,200	12,122	6.00	72,732	3	11.50	36
Grade IV	240	555	4.00	2,220	899	5.00	4,495	609	10.00	6,090
Bran	120	775	2.50	1,938	4,244	2.50	10,610	4,074	3.00	12,222

Source: See notes 1 and 2 below.

[1] Reusse, E., *Ghana's Food Industries. An Economic Analysis,* 1968, page 64. Data refer to Tamale Rice Mill, the only one in operation at that time.

[2] Ampah, J. B., Application for a Loan to Finance the 1973/74 Paddy Purchases and Milling Operations of the Rice Mills Unit. Appendices I-IV.

[3] Average price at Tamale Rice Mill, Reusse, op.cit., page 64, Table 26.

[4] Average price, see Appendix A.6. of this report.

which the Rice Mills Unit had employed. There were indications to the effect that such procedures often slowed down the movements of paddy stocks from the farms and caused them to visit the Unit or the city more often in order to cash their cheques or collect their payments. Five small-scale farmers, who sold paddy to the Unit and have their farms in Yapei, Salaga and Damango, were asked to give some details of their complaints, with references to one or two crop years. Their accounts were checked with some of the documented evidences and information given to me by two officials of the Rice Mills Unit and the Tamale office of the Ministry of Agriculture.

It seems that 1969/70 and 1970/71 crop years had been the most trouble-some since 1967/68. The "no market" problem revolved around commercial production of C4.63 and the sale of other varieties which had been commercially accepted by both the farmers and Extension Officers of the Ministry of Agriculture.

The farmers' side of the "no market" problem is that the yield of C4.63 was reduced considerably by the incidence of blast, a fungal viral disease which retarded plant growth and yield.[143] Farmers who grew C4.63 incurred considerable losses, consequently they had insisted on obtaining 12 cedis instead of the 10 cedis to compensate their yield losses incurred by growing C4.63. The guaranteed price for other varieties was 9 cedis per bag of 180 lbs.[144] The Rice Mills Unit could not offer that price of 12 cedis. But private processors and wholesale-middlemen were more willing to buy C4.63 at 12 cedis and other varieties at 10 cedis per bag. Given this choice the farmers decided to hold on to their claim. In the long run there was an understanding among some of the farmers to sell only C4.63 at the prevailing guaranteed price of 10 cedis to the Rice Mills Unit and other varieties to private buyers on the open market.[145] But money was not made available (by the Government) in good time to finance such purchases. As a result most of the farmers had to approach the Agricultural Development Bank for loans.[146]

Another aspect of the problem was that the Unit's purchasing techniques were cumbersome, annoying and time wasting.[147] Those techniques often resulted in considerable reduction of the number of bags a farmer had brought for sale.

An official of the Rice Mills Unit attributes their inability to buy all the paddy to many factors of which the following are important.

(a) The guaranteed price has often been about 20-40 per cent lower than what competitors had offered.[148] The official explained that the "high cash returns to smugglers enabled them to bid prices higher than the guaranteed or the price that could be obtained normally on the open market.[149]

(b) For some time, the Rice Mills Unit had experienced difficulties in procuring adequate financial resources to meet its paddy purchases and other operational costs. Farmers wished to have cash for the sale of their paddy. To some farmers a trip to the bank to cash cheques presented an extra drudgery which caused them to seek other buyers.

(c) Some farmers had the tendency of adulterating their paddy. As a result certain measures had to be taken to reduce the degree of adulteration and to ensure quality for milling purposes.

(d) For some time, that is until 1972/73 transport and storage facilities had been inadequate to carry out its purchasing functions. This caused many farmers to sell to middlemen-wholesalers who had their own transport facilities and were ready to pay higher prices than the guaranteed-minimum price.

Table 6. *Estimated Values of Performance Criteria, given the Values of Average Price levels, Distribution costs and quantities sold by each firm in 1972/73.*

Firms	Quantity of rice (bags) Total	sold at wholesale	Average wholesale price (cedis)	Total sales value (cedis)	%	Distribution costs (cedis)	%	Total sales margin (cedis)
Rice Mills Unit[1]	36,515	35,000	13.80[2]	567,977	7.7	8,786	1.6	—[3]
Private Firms[4]	647,315	226,460	16.60	3,759,236	51.2	792,610[5]	21.1	702,026[5]
G. N. T. C.[6]	356,835	159,575	17.00	2,712,775	36.9	710,110	26.2	502,660
Foreign Firms[7]	118,945	17,850	17.00	303,450	4.2	69,435[8]	22.9	56,230[9]
Total	1,159,610	438,885	—	7,343,438	100.0	1,580,941	71.8[10]	1,260,916

Sources and *notes:*[1] Ampah, J. B., op.cit., Appendix A.6.

[2] Average price of grade I, II, III and IV.

[3] No profit up to 1972 73.

[4] Ministry of Agriculture, Economics and Statistics Division (working paper). The term "Private Firms" signifies all other milling and trading firms, etc.

[5] Appendix A.3.

[6] Ghana National Trading Corporation.

[7] Appendix A.4.

[8] 18.5 per cent of sales price for three foreign importing firms: United Africa Group of Companies, Compagnie Française Africain Occidental and Swiss African Trading Company (Personal communication).

[9] 26.5 per cent of sales price for firms mentioned in (*8*) above.

[10] In per cent of sales.

6-3.3. Sales performance of the Rice Mills Unit

The evidence in Table 6 shows that the wholesale markets in 1972/73 crop year were supplied with local rice from Rice Mills Unit and from Private firms.[150] The table also indicates that Ghana National Trading Corporation and some foreign importing firms supplied imported rice. We can therefore express the volume of actual market sales for 1972/73 as the sum of sales made by each of the firms. That is ₵7,343,438 =(₵567,977 + ₵3,759,236 + ₵2,712,775 + ₵303,450).

From this expression the market share of the Rice Mills Unit in 1972/73 was about 8 per cent of the total rice sales. In relation to the total sale of imported rice the Unit's share of the market was about 16 per cent. This shows the relatively insignificant sales impact of the Rice Mills Unit on the wholesale markets for rice. However, in view of the decreasing market share of the foreign firms, we can assume that the Rice Mills Unit may acquire their shares of the market for imported rice in future.

6-3.4. Some of the reasons for the Unit's low-level of performance

In principle, we would expect that some of the intervention measures would protect and/or guarantee, so to speak, Rice Mills Unit, a comparatively significant share of the wholesale markets. It appears that the markets have been sufficiently open to allow keen competition among the firms we have mentioned in Table 6.

We have indicated the values for such variables as *price* per bag and the *number of bags* actually sold by each category of firms in 1972/73. Among other factors which seemed to have influenced sales are the *quality* of the rice and the *method of distribution* employed by each of the firms. We also have to reckon with the competence shown by the various management personnel in operating these variables to effect the desired sales results. We may postulate that, given the number of firms, the volume of each firm's sales at any given period of time would be determined, competitively, by the quality, the quantity and price of a given type of rice and the method used for its distribution.

It follows that the nature of competition would depend, considerably, on the skilful application of one's managerial competence. We shall analyze the performance of The Rice Mills Unit in relation to its competitors as mentioned in Table 6.

6-3.5. Quality of rice

Private firms supply two types of rice. One of them is raw-milled. It has a white, chalky appearance and it is normally graded into four categories, according to the percentage of brokens. The other type of rice is marketed by traditional processors. It comprises (a) a light-brown parboiled-milled rice with red-streaks due to undermilling and (b) a parboiled-milled rice with a dark-reddish brown appearance.

Two types of imported rice are marketed by Ghana National Trading Corporation and Foreign Firms. One type of the imported rice comes from Indo-China and from other African countries. It has both medium- and short-grained kernels. It has a white, chalky appearance. The second rice is imported from some European countries

Table 7. *Comparison of Quality-Factors for Some Local and Imported Rice per 500 grams.*

	Grade	General appearance	Percentage of whole kernel	Percentage of white[1] bellied kernel	Percentage of inedible objects[2]	Kernels of contrasting classes and colours[7] (percent)	*Percentage Brokens*[8] 3/4	1/2	1/4	*Nutritive Values*[9] Calorie gr.	Protein mg.	Vitamin B_2: mg of thiamine
1. Rice Mills Unit	I	Chalky white	50-60	3-5	1-3	5.0	25.0	10.0	—	1735[10]	15.0[10]	2.0[10]
2. Rice Mills Unit	II	"	35-40	10-15	1-3	5.0	35.0	25.0	—	1735[10]	15.0[10]	2.0[10]
3. Mencilo Rice Mill	I	"	75-85	3-5	—	—	15.0	—	—	1800[10]	15.0[10]	2.0[10]
4. Mencilo Rice Mill	II	"	35-40	10-15	—	—	25.0	15.0	—	1800[10]	13.0[10]	2.0[10]
5. Traditional Processors	IR.5[3]	Light brown	70-80	1-2	2-5	5-10	10-20	1-5	5-10	1880[11]	40.0[11]	5.0[10]
6. Traditional Processors	Pa.1[4]	dark brown	70-80	1-2	2-5	5-10	10-20	1-5	5-10	1880[11]	40.0[11]	5.0[11]
7. Imported Rice	I[5]	glossy white	85-95	1	—	—	1-5			1845[12]	30.0[12]	3.0[12]
8. Imported Rice	II[6]	chalky white	85-95	5-10	0	—	1-2	—	—	1860[12]	25.0[12]	2.0[12]

Source: Own sample results; Grist, op.cit., pp. 241-245; Records from Mencilo Rice Mill and Rice Mills Unit.

[1] Kernels which have white spots.
[2] Such as stones, weed seeds, paddy, pieces of sticks, damaged kernels, etc.
[3] It has been difficult to grade traditionally processed rice. IR.5 has been used to designate the type of parboiled rice.
[4] Pa.1 is a variety designation for the type of parboiled rice.
[5] United States rice No. 5.
[6] Rice from Indo-China and other African countries.
N.B.: The graders for imported rice has been employed only as a convenience and to facilitate distinction.

[7] that is, long-, medium- and short-grained kernels, different varieties and colours due to undermilling.
[8] from the results of own sample.
[9] Sai, F. A., op.cit., Grist, D. H., op.cit., Mencilo Rice Mills Records; Dimopoulos, J. S. and Muller, H. G., "Effect of Processing Conditions on Protein Extraction and Composition and on Some Other Physicochemical Characteristics of Parboiled Rice", *Cereal Chemistry*, January February, 1972, pp. 54-61.
[10] Sai, F. A., op.cit., Table 6.
[11] Grist, D. H., op.cit.; Dimopoulos and Muller, op.cit.
[12] Estimates from data on packages on sale.

and from the United States. This type of rice has long and medium-grained kernels and a white glossy appearance.

The Rice Mills Unit markets 4 grades of which the first 2 are compared to other types of rice in Table 7. In general the Unit's grade I compares favourably with Mencilo's grade II. In comparison with imported rice the Unit's quality standards seem rather low. This is due to the presence of high percentage of broken kernels, extraneous objects and kernels of contrasting classes as shown in Table 7.

Ghartey reported a pre-market test on C4.63 at the 1970 Agricultural Conference on Rice Production. It was found to be good flavoured and to have an appealing colour. However the cooked rice was found to be sticky.[151] Another market survey made by the Ministry of Agriculture in 1969[152] showed that the high percentage of broken kernels and the presence of extraneous objects had tended to increase consumers' prejudice and lowered their patronage.

Nutritionally, the Unit's rice yields the lowest calories among those considered in Table 7. The protein and thiamine (anti-beriberi vitamin) contents of about 15-20 and 1-2.5 micrograms per 500 gm of rice are about one-half of the protein and thiamine content in imported rice.

6-3.6. Quantity of rice

The quantity of rice which was sold by the Rice Mills Unit in 1972/73 was about 37,000 bags of which 35,000 bags were sold on the wholesale markets. This is about one seventh of what the Private firms sold in the same year. But it is about twice the quantity of imported rice sold by the Foreign firms, or about one fifth lower than the quantity sold by Ghana National Trading Corporation in 1972/73.

The figure of 37,000 or 35,000 bags comprises all the four grades distributed by the Unit. However if we consider quality factors and consumers' preferences, the Unit's quantity of rice would be limited to only grade I. Broken kernels are considered by consumers as being unfit for human consumption. Therefore the Unit's 3 other grades which contain high percentages of brokens would have little market value and might also account for the complaints of "no market". For instance in February 1970, J. A. Brimah, the Northern Region Chief Executive was told that "there was no market for over 1000 bags of milled grade one rice" at the Tamale Rice Mills.[153] It may be noted from Table 7 that the Tamale Rice Mills grade I rice contains as much as 40 per cent of broken kernels which consumers dislike.

6-3.7. Prices

The selling prices used by the Rice Mills Unit have been determined by administrative practices, where the price for each grade was related to recovery rates and the degree of control that should be exercised over imported rice. For instance, in 1972/73 crop year, the selling prices of grades I, II, III, and IV were respectively 17.00, 12.50, 11.50 and 10.00 cedis. The controlled wholesale price for imported rice was 15.00.[154] But the actual price turned out to be 2 cedis higher than the control price. The average wholesale price of the Private firms was 16 cedis 60 pesewas.

An official of the Unit remarked that their prices are comparatively lower and that in setting prices the Government has not taken into account all the costs of production and distribution.[155]

In relation to its competitors, the Unit's price

(a) of grade I seems too high, if we take into consideration the quality factors which tend to shape consumers' tastes and preferences. As indicated in Appendix A.6, Table A.6.3, we may note that the price of grade I was reduced from 17 cedis to 16 cedis 50 pesewas and then to 14 cedis 50 pesewas in the same year.

(b) of 13 cedis 80 pesewas being the average price of the 4 grades, seems too low. Such an average price may add some points to the inferior quality of the rice.

The average difference of a few pesewas among the prices of different types of rice found in the markets, seems too insignificant to fetch any competitive advantage for the Rice Mills Unit. For one thing, prices for both local and imported rice have been under control to attain other intervention objectives. On the other hand, while price control had prevented the Unit's price from aligning itself to market conditions, the heavy subsidies on imported rice have tended to increase the competitive advantages enjoyed by importers.

6-3.8. Distribution channels and costs

The choice of distribution channels and its costs have had direct effects on the volume of sales. It tended to increase the spatial and temporal availability of rice. The distribution costs which consisted of transport charges, administrative expenses and promotion costs had depended on the degree of coverage the Manager intended to have. Importers transport costs are generally low. This may be explained by the fact that the sales area of their distribution is compact and does not involve long distances. Another factor is that distribution costs are often spread over a number of other merchandise which are often distributed at the same time to their sales stores.

Estimates of distribution costs for 1972 73 are given in Table 6. Such distribution costs were about 2 per cent for the Rice Mills Unit, 21 per cent for the Private firms, 26 per cent for Ghana National Trading Corporation and about 23 per cent for Foreign firms in relation to their respective sales.

With the exception of the Rice Mills Unit, each of the three business firms employ or operate distribution channels which have multiples or chains that had attained wider coverage. Other channel arrangements, such as commission stores, have also been employed. Given the extensive spatial coverage of Ghana National Trading Corporation and other distributors in the marketing system, we can suggest that the type of distribution arrangement being employed by the Rice Mills Unit is not suitable for the role it has to play in the desire to attain self-sufficiency in the supply of rice.

6-3.9. The management function

The management factor refers to the authoritative supervision and implementation, over a period of time, a sales policy which could have been worked out from the above-mentioned variables.

It appears that the nature of intervention as conceived in the 1960s had undergone changes as a result of certain developments of the political, economic and ecological factors confronting the system. Changes have occurred in the management styles of Ghana National Trading Corporation and other competing business firms. However, owing to the degree of autonomy enjoyed by them, they had managed to adapt their actions to the changes which had taken place. They had therefore maintained a relatively stable management over 1964-1973.

We noted earlier that the management of the Rice Mills Unit had been supervised

by the Ministry of Agriculture, which often appointed a committee for this purpose. The evidence suggests that the appointment had often been effected to enable the Government to enforce plans which could not have been justified on economic reasons, also if the committee had a higher degree of autonomy. For instance the present manager of the Tamale Rice Mill indicated that in view of the low level of milling efficiency, it is uneconomic to maintain the Unit's "large labour force".[156] At the same time, the manager argued that

> ... it is no easy task politically to shed a surplus labour of 262 workers of all categories, especially, when the majority of them has served the Unit for more than a year.[157]

Considering the type of management organization which the Unit had been receiving we may notice that each one of the four changes which had occurred in the Government resulted in a change of the management committee. Consequently, the Unit had not been able to acquire, systematically, the needed managerial expertise to formulate effective strategies for the operation of the milling firms and for selling their products.

6-4. Effects of Intervention on the "No Market" Problems

Some aspects of the problems which might have been caused by intervention had been mentioned in earlier sections of this chapter. In this section we will concentrate our analysis on major problems which had revolved around the adoption of new varieties of rice, such as C4.63. Our analysis has shown that some of the basic "no market" problems of adopting new varieties of rice are associated with the differences in the relative importance which the business firms, the Government and the consumers attach to a set of attributes of a given type of rice. This statement can be related to the primary problem of the "no market" situation (namely, the inability of the extant marketing system to equilibrate the supply of and the demand for rice) as discussed in Chapter 3.

Rice consumption, especially in urban areas, had shown an increasing trend. Many urban markets had been characterized by occasional scarcity of the type of rice which is more preferred by different consumers. Most rural private consumers prefer local rice of all kinds, while urban coastal consumers prefer imported rice.

Drastic taxation of imports during 1962-1965 caused a decrease of about 41.100 tons of rice between 1962 and 1965. Such intervention measure might have been partly the cause of scarcity and sharp rising prices in that period. On the other hand the measure seems to have had two other important effects: (a) There were substantial increases in the production of local rice to compensate for the reduction. But substitution of local for imported rice seemed to have been offset by a rapid increase in institutional consumption[158] which had occurred through out the decade.

In January 1968, a survey of consumer opinion[159] on rice from Tamale Rice Mill revealed that its parboiled rice

(a) has higher nutritive values, but

(b) it solicited low consumer appreciation. It has commercially an objectionable odour, colour and contained a large proportion of extraneous objects, especially stones which could damage teeth when chewing.

(c) and that its lower price seems to confirm consumers' dislike for it and also that it was inferior.

In 1970 raw-milled rice was introduced by the Rice Mills Unit. Ghartey reported pre-market tests of this rice at the 1970 Agricultural Conference on Rice Production. The survey showed that the size, appearance, taste, the tendency for the grains to coagulate when cooked, the presence of weed seeds and stones had a negative influence on consumer acceptance.[160]

While my investigations summarily confirmed Ghartey's report I observed that

(i) some consumers and traders complained[161] about the high content of brokens which tend to reduce the storage life of rice.[162]

(ii) some school children and formally educated adult consumers know that consumption of white rice could cause beriberi. Yet more polished rice is eaten by this category of consumers. Although some of the above-mentioned quality factors were cited as explanations, it seems to me that conservatism, aesthetic desires and the prestige which one acquires through formal education are more plausible explanations.

(iii) On the other hand, some of the less formally educated consumers patronize parboiled rice because of dietary needs, the grains swell better and have taste better than polished white rice.

In other words intervention seems to have increased the degree of consumer loyalty to a given type of rice.

At the farming stage the choice of a variety for cultivation had been determined by the susceptibility of that variety to plant diseases, lodging, maturation period and timely availability of seeds and other input needs. Yenli, the Regional Agricultural Officer in the North, and who has once chairmaned the Northern Region Rice Marketing Committee which was to manage Tamale Rice Mill, reported instances where some farmers had to grow their own seeds because

(a) they could not wait any longer for the recommended variety to arrive from Kpeve and Kpong

(b) certain varieties, e.g. C4.63, were susceptibel to ecological factors blast, which tended to reduce yields

(c) C4.63 matures after 170 days, i.e. 40 days more than the prescribed period, so that its harvesting coincided with rains which increased harvesting period by 3 weeks.[163]

The experiences of marketing problems for some farmers, both small- and large-scale, were inevitable because some of the milling firms were idle most of the time. And even those which had been in operation under-utilized their milling capacities, and as result they were unable to absorb all the paddy produced by the farmers. Those farmers who wished to sell out immediately after harvesting were the hardest hit, and they had to turn to the private processors and wholesale-middlemen to dispose of their paddy. Tagoe, an Agricultural Development Co-ordinator had indicated that there has been some annual surpluses of paddy which the Ministry of Agriculture could not buy.[164]

At the milling stage, purchased paddy often contained as much as 27 per cent of moisture.[165] Owing to an inadequacy of certain facilities, the Rice Mills Unit has not been able to control the quality of paddy to suit milling requirements. In order to obtain rice which has a commercially acceptable appearance, paddy has to be milled twice or more, so that a large quantity of brokens, bran and splits had been produced in relation to the percentage of whole heads.[166] In a private conversation, Ghartey

indicated that there had not been any problem with rice marketing.[167] An official of the Rice Mills Unit could not confirm or deny that the mills had experienced difficulties in selling their rice.

We can only surmise that the functions of the ad-hoc marketing committee can be enough support for the allegations that *sometimes* the milling firms had found it difficult to sell their rice. These periods have partly concided with (1) harvesting periods which are also the peak time of their milling activities, namely, between December and March of every crop season, (2) increased imports of rice under food aid programmes, especially during 1966–1969.[168] Almost all the markets were saturated with short-grained rice which had been imported through the Ghana National Trading Corporation under a food aid agreement. Reusse noted that aid imports added 10,000 tons of rice each year to the normal commercial needs during 1966–1968.[169] Such huge imports tended to slow down the movements of rice from the milling firms to the consumption centres. In spite of these problems, it seems that the most challenging "no market" problem for the milling firms is their inability to produce clean rice which is more preferred by coastal urban consumers.

The Government was aware that if there were no adequate marketing facilities for producers and the milling firms "a vicious circle" might occur. That is

> no market because there is meagre production and no increased production because of no marketing facilities.[170]

In spite of this awareness implementation laid particular emphasis on rice production. The appointment of ad-hoc marketing committees to manage and sell rice from the milling firms was made in part to protect and maintain Government interest in the efforts, and partly as a check against smuggling. Such an administrative measure increased the weight of civil service red-tapeism which caused delays and fostered a non-commercial attitude.[171] Agriculture and industry were "productive", but "commerce and finance" which are connected "only with organizing the distribution",[172] i.e. "the purchase and re-sale . . . of food"[173] were regarded as "unproductive",[174] The dynamics of these developments appeared to have increased the growth of black marketing smuggling and frequent shortages which had to be alleviated through large imports of rice and other foodstuffs.

6-5 Conclusion

In evaluating the performance of intervention we may note that, first, it sought to achieve self-sufficiency in the shortest possible time. After nearly 10 years of operation and the resultant unimpressive performance at certain stages of the channel, it is difficult to define "the shortest possible times" needed to attain self-sufficiency.

Many of the intervention measures have been subsidized "to maintain a maximum number of commercial paddy farmers" in the system. Some farmers appreciate the Government's efforts to stabilize their incomes by operating guaranteed minimum price through the Rice Mills Unit. In view of the keen competition in paddy markets it seems that some farmers will sell their paddy to private buyers who have been offering higher prices than the guaranteed price.

The evidence indicates that an effective marketing system must be developed and

maintained. It may help the Rice Mills Unit to attract more farmers, especially those who want to sell out immediately after harvesting. For the Rice Mill Unit to provide effective market for paddy farmers, its rice must be sold as well. In this case the present distribution arrangement may not be suitable.

In relation to the nutritional needs of consumers, it appears that the increasing availability of rice had generally enabled them to satisfy their calorie needs. Rice contains low amounts of protenaceous substances. As rice from the Rice Mills Unit is not fortified, consumers have replenished their protein requirements from imported rice and other foodstuffs. Unfortunately protein defficiency may continue to be a nutritional problem for some time.

Prices have generally been controlled and subsidized. It seems that rice eaters have been and may have to pay more for their most favoured type of rice. Thus if the performance of intervention in local rice has been relatively low, scarcity of rice seems to have been alleviated successfully through imports.

In concluding this chapter certain aspect of the analysis can be mentioned. intervention measures have had varying effects on the output of paddy, the availability of both imported and local rice, the structure of the marketing system in general and on the channel in which Rice Mills Unit has been operating. The performance of the Rice Mills Unit in terms of providing effective markets for farmers' paddy and of providing local rice were affected too.

The analysis has shown that there has been substantial increases in paddy output, but the Rice Mills Unit has depended directly on the Government for its financial resources which had been allocations from the government budget and a special Rice Levy Fund.[175] Government financial practices seem to have contributed considerably to the Unit's inability to provide timely and effective market for the farmers.

On the sale of rice we noticed that the type of distribution channel which the milling firms used were not consistent with the roles they have to play in the desire to achieve self-sufficiency. Two of the reasons for this assertion are as follows: In the first place, the extant distribution channel has been operated directly by the Government. As such the frequent changes of Governments have caused corresponding changes in the management (i.e. personnel, attitude, etc.) of the channel in which the Rice Mills Unit has been operating. An official of the Rice Mills Unit pointed out that this factor has been a limiting factor on the operations of the Unit. It might even be associated with the Unit's inability to produce the type of rice that consumers want. In the second place, the system of intervention measures is officially recognized as large-scale *commercial* rice production. Since the Ministry of Agriculture or the ad-hoc marketing committee has no real commercial role, it may be questionable whether either of them is the most appropriate statutory agent to manage such commercial policy and to provide the much needed creative marketing policy for the Rice Mills Unit.

In an article on agriculture policy, La-Anyane stated that "a problem exists with rice".[176] Other recognized problems[177] are associated with adoption of new varieties of rice, storage losses, processing and milling, pricing, inadequate market information, selling techniques, etc. The suggestions[178] discussed at the 1968 and the 1970 rice conferences seemed to point to the need for an authoritative component to manage the system of intervention measures on "purely commercial lines". Our contribution to the suggestions will be discussed in the next chapter.

7. The Proposed Vertical Integrated Marketing System

7-1. Overview

In the concepts of markets and marketing, we stated that rice markets are essentially the extensions of paddy markets. Analysis of intervention effects has indicated that some market limiting conditions which might occur in rice markets could have precarious repercussions on paddy markets. To some extent the opposite could also be true.

The purpose of our discussion in this chapter is to suggest a model which could provide a relatively long-run stable organizational structure and a more market-oriented Rice Administrative Board to operate the system of intervention measures. This chapter represents an attempt to achieve the third research objective as defined in Section 1–3.

We have arranged the contents of this chapter in the following manner. The underlying assumptions and motives for vertical integration is discussed in Section 7-2. It includes a brief discussion of three of the motives for vertical integration. In Section 7-3 we have sketched the structure of the model and how the Rice Administrative Board can be constituted so that its Executive Committee will comprise personnel from the firms included in the model. The management of the model is discussed in Section 7-4, with respect to the process of decision making and its implementation. The management process is illustrated on one of the many aspects of the "no market" problems in Section 7-5. This is followed with a conclusion in Section 7-6, where we have discussed some of the advantages and the disadvantages which might be experienced by the interest groups concerned.

7-2. The Underlying Assumptions and Motives for Vertical Integration

The term "vertical integration" is used in this context to signify

(a) a process of completing or formalizing the interdependent relations among the business firms, the Government and consumers in their systematic efforts to achieve self-sufficiency.

(b) actions taken to effect changes in some features of the institutional relations prevailing in the system. For example, the replacement of the ad-hoc marketing committee with a relatively stable and more market-oriented one.

Processes (a) and (b) involve the establishment and the delegation of authority and responsibility to a newly constituted Rice Administrative Board to seek ways of achieving co-ordination for the optimal operation of the intervention measures. At this juncture we can define our model of vertical integrated marketing system as that

type of organization[179] established under an authoritative Rice Administrative Board which will pursue unified business policies on a number of successive commercial operations in the production and distribution of (paddy and) rice among different markets.

In this definition the term authoritative signifies the "amount of legal power"[180] that may be delegated to the Rice Administrative Board. In this context, the "amount of legal power" will define the extent to which the Rice Administrative Board can "influence the behaviour of" the business firms included in the model system. Hence the more the amount of legal powers enjoyed by the Rice Administrative Board

(i) the greater will be the degree of the system's autonomy in relation to the Government.

(ii) the stronger will be the legal base of the Rice Administrative Board to influence the behaviour of the firms included in the system on more commercial lines.

(iii) and the greater will be the degree of vertical integration.[181]

We may postulate that "the amount of authority" that may be delegated to the Rice Administrative Board will depend, ceteris paribus, on the motives for integration.

Vertical integration has been advocated on a number of reasons of which the following can be considered as sufficient for our purposes.

1. The first motive is an assumption that many aspects of the "no-market problems" had been related to the inadequate co-ordination of goals and actions among the interest groups in relation to overall intervention objectives. For instance, it was indicated in the previous chapter that while the Rice Mills Unit utilized administrative means to dispose of its rice, it has not been difficult for a commercial firm like Ghana National Trading Corporation to obtain licence to import rice for redistribution. So that the desire to attain self-sufficiency (i.e. supply-demand equilibrium) in local rice and the reduction of the country's dependence on imported rice had been at variance.

2. The other motive for vertical integration is that the activities performed at each stage in the channel are related in such a way that their separation is almost impossible. For instance, consumers obtain rice from the retail stores which may depend on the wholesale stores or the Rice Mills Unit for their stocks. The Rice Mills Unit depends on the farmers for paddy which it mills. These constitute successive obligations which have been executed by separate, often small-scale business firms. By selling their paddy to the Rice Mills Unit at the guaranteed minimum price both the farmers and the Government are fulfilling the obligations they owe to each other. But the sale of rice by administrative means could not have fulfilled the commercial obligation the Government might have had before the Rice Mills Unit and the consumers. It appears that consumers' demand for certain marketing services might not always be provided through administrative means.

3. The third motive for integration is related to the need to preserve the political interest of the Government. The fact is that integration, in this context, may be possible only if the Government expresses its willingness to proceed with the process. The issue at stake here is the amount of power the Government has to invest in the Rice Administrative Board or the degree of autonomy the model organization should have. In this respect we can rely on certain provisos which, while allowing for some autonomy, might strengthen Government control as well. In the first place we are aware of the fact that the Government can exercise its powers in any manner it may choose. However, Mark-Hansen, the Managing Director of the erstwhile Food Marketing Corporation, stated that

. . . if the Government (wishes to) own some mills in the interest of its price stabilization policy[182]

there can be no effective organization as ". . . a vertically integrated set up . . . under one management".[183]

Furthermore, the business firms included in the model are *owned* by the state but some of them operate on some kind of co-operative or contract arrangements. An example of this arrangement can be the type of obligation that exists between the farmers and the Rice Mills Unit. Other firms have some representation on one or two statutory bodies. For example, the Grains Development Board has representatives from many of the Government departments, including the Rice Mills Unit, which are connected with the production of rice. Some of the firms are part of the same legal entity, namely, public enterprise and being operated by the Government. For example, Ghana National Trading Corporation is a public enterprise.

The conditions correspond to the attributes of the institutional relations which form the bases for Mattsson's concept of institutional integration.[184] According to this concept, Mattsson states that these

. . . attributes of the institutional relations can be combined in so many ways . . .[185]

to indicate the amount of legal powers or the degree of autonomy the Government can bestow upon the Rice Administrative Board.[186]

For our purpose we shall assume a partial vertical integration. That is the Rice Administrative Board is sufficiently autonomous to operate the organization "on purely commercial lines".[197] We may also remark that although these motives may be tangible enough, we are equally aware that the interest groups may also be motivated by the advantages and the disadvantages of vertical integration. We shall discuss such determinants of vertical integration in Section 7-6 below.

7-3. The Structure of the Proposed Integrated System

As indicated earlier the proposed integrated system is based on the combination of the channel in which the Rice Mills Unit has been operating Ghana National Trading Corporation and a number of non-market institutions under one administrative board. The structure of the new system can be described with the help of the schema in Fig. 6. It may be regarded as consisting of three sub-systems, of which brief descriptions are given below.

1. The Rice Administrative Board. The upper portion of the figure shows a sub-system for controlling and co-ordinating the activities of the integrated system. The Board also serves as the means for implementing Government intervention policies. It can be constituted as follows:

2 persons from the farms
2 persons from the Rice Mills Unit
2 persons from the Ghana National Trading Corporation
1 person each from the Grains Development Board and from the Ministry of Agriculture.

2. From this group an Executive Committee can be established to operate the new system on a commercial basis. The Executive Committee can be constituted from one farmer, who will act as liaison officer and 4 others that may be shared equally between

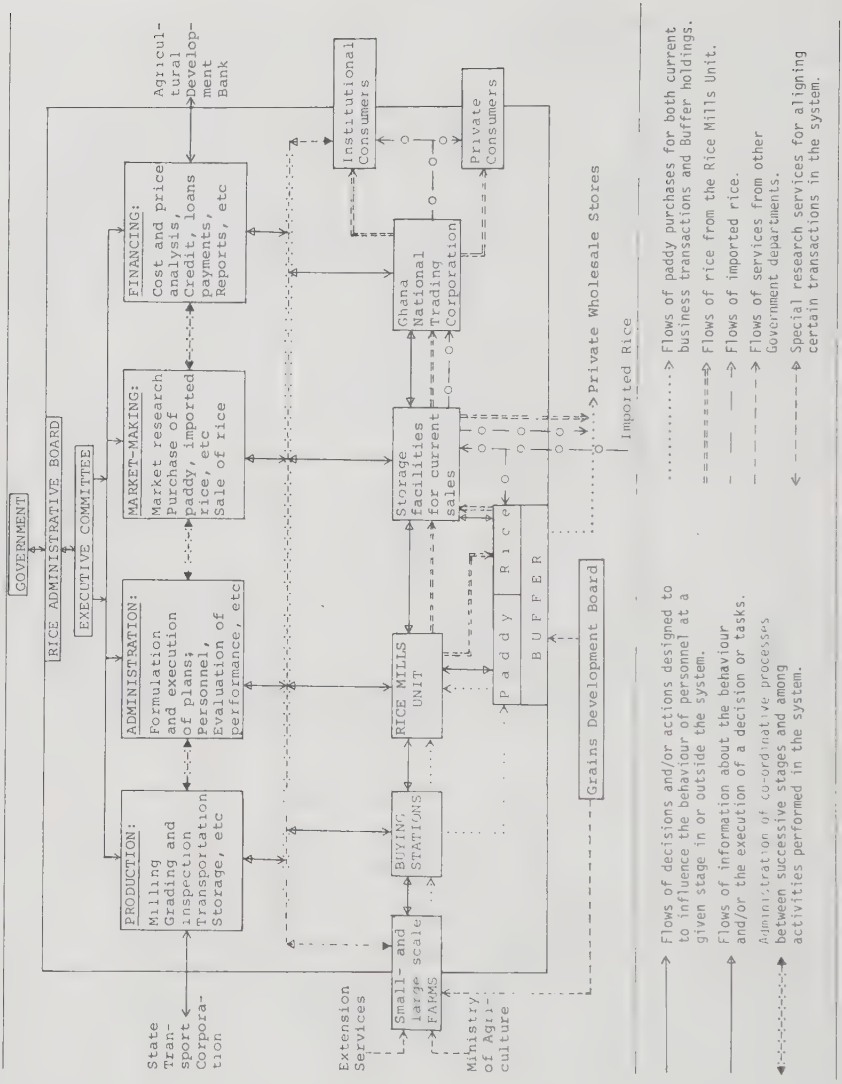


Fig. 6. Diagram of the Proposed Vertical Integrated Marketing System

Rice Mills Unit and the Ghana National Trading Corporation. On the other hand such a Committee may be formed from the divisional managers of the business firms (the lower sub-system of the figure) where specific activities are to be performed.

By the nature of its constitution the Executive Committee will form an integral part of the Rice Administrative Board. As such, decision making, its implementation and control of business operations, could well be co-ordinated for an optimal running of the new organization.

The lower part of the figure indicates the basic structure of the proposed organization in terms of the business firms which, as divisions, will have to perform certain activities in the following manner:

1. *Private small- and large-scale Farms.* These are farms which may be contracted

to grow specific varieties of rice and sell them to the Rice Mills Unit at a guaranteed minimum price per bag.

2. *Buying stations.* These consist of the current 25 centres being operated by the Rice Mills Unit to purchase paddy from farmers in both the Northern and Upper Regions. Buying Agents will inspect the paddy for purity of variety, correct weight and pay cash for small quantities and cheques for larger quantities. Buying Agents should send returns on purchases to both the Rice Mills Unit and to the Information Units of the Grains Development Board or the Ministries of Trade and Agriculture.

3. *The Rice Mills Unit* consists of the seven resuscitated milling firms at Bawku, Bolgatanga, Atebubu, Kwame Danso, Tamale, Wa and Yendi. At present the Rice Mills Unit operates three milling firms at Bolgatanga, Tamale and Wa.[188] Each of these milling firms has an average paddy intake capacity of between 10 and 15 bags per hour, i.e. between 80 and 120 bags per milling day.[189] For current milling activities, the Rice Mills Unit will mill all paddy received from the Buying Stations or from the Buffers, grade its products into standard package sizes with the appropriate designation of grade or trade mark, price tags, etc. In order to avoid stock-piling at the milling firms, the Buffers can be asked to collect milled products (except bran) which may exceed the needs for current business activities in the system and between the system and the private business firms and institutions.

4. *Storage Facilities* can be created from the existing facilities for storing paddy and rice. For instance, the Rice Mills Unit has storage facilities which might be used only for paddy in the following towns.[193]

Tamale (110,000)	Fuu (10,000)
Bolgatanga (25,000)	Jimili (15,000)
Bawku (25,000)	Wa (25,000)
Yendi (25,000)	

The concrete silo system which was to be operated by the erstwhile Food Marketing Corporation[190] can be used to operate the "Storage Facilities" of the new organization to store rice at Accra (10,000 tons), Cape Coast, Ho, Kumasi, Sunyani, Takoradi, Tamale and Wa (5,000 tons each).[191] Bulk selling or wholesale activities to such buyers as institutions, private wholesale and retail stores can easily be conducted from these Storage Facilities.

5. *Buffers* or Granaries can be created to hold both paddy and rice at peak harvesting and milling periods. These facilities can be used to hold excess paddy or rice which might result from bumper or very good harvests. Buffer stocks of both paddy and rice may then be released gradually during a crop year or between crop years of poor harvest to

(a) replenish current paddy needs of the Rice Mills Unit

(b) replenish sales needs of the Storage Facilities and retail shops

(c) stores and to

(c) fulfil orders from private business firms and institutions outside the model organization.

Buffer stocking may be regarded as a stabilization function which may require expert assistance from the Grains Development Board, the Ministry of Trade and the Ministry of Agriculture. Purchases for stabilization functions can legitimately be financed from the Rice Levy Fund of the Ministry of Agriculture. Sales from Buffer stocks can be effected at prices which may be estimated to reflect the costs of stocking

activities. For example, the Grains Development Board has two butyl silos with a total holding capacity of 2,000 tons (in Bolgatanga and Tamale) that can be used for Buffer stocking.

6. *Ghana National Trading Corporation* can be persuaded to distribute local rice in addition to the imported rice.

7. *Consumers* consist of both private and institutional customers who buy normally from the Ghana National Trading Corporation.

Apart from the above-mentioned components of the proposed organization some non-market institutions may be requested to provide certain services that may be necessary for the successful implementation of the intervention objectives. For example, the State Transport Corporation can provide transport services for moving paddy to mills or storage facilities in the system, etc. The Ministry of Agriculture can be asked to provide extension services, while the Grains Development Board can operate a buffer unit or state granary. The Agricultural Development Bank can continue to provide financial services for current business transactions of the new organization on a normal commercial basis.

To capitulate on this section we may say that the basic structure of the proposed integrated organization is that it consists of the farms, the Rice Mills Unit, Buffer and Storage Facilities, Ghana National Trading Corporation and some private and institutional consumers. The system allows for the provision of certain services by other Government non-market institutions. It may be operated by an Executive Committee whose activities[192] may be supervised by a Rice Administrative Board.

7-4. The Management Process for the Proposed Organization

The Rice Administrative Board will operate the proposed organization by making long term policies on the objectives to be pursued, the types of business transactions that must be performed from time to time at the firm level and the techniques that should be employed to accomplish the tasks and objectives. Hence the business of management starts with the concept of marketing so that all other activities will ultimately be dependent upon it.

When the Rice Administrative Board and the Executive Committee sit down to discuss business plans, they will decide on what measures are necessary to carry out certain tasks (see Fig. 6 and Appendix B.4) and to implement certain objectives. The process of policy making may depend on three factors. The first one is access to valid and adequate information on Government and divisional objectives, market conditions, the organization's ability and resources, etc. Such information can be obtained from Government policy directives, from the records of divisional firms and institutions, through research and from recommendations from the Executive Committee.

Prior to the meeting the Executive Committee, which is responsible for the daily operation of the organization and its divisional firms, will have to submit recommendations and studies of operational problems that necessitate action. Examples of such problem areas can be the need for policies on the guaranteed minimum price per bag of paddy, feasible wholesale and retail prices in relation to the control price, handling of stocks and other problems which are related to distribution

Table 8. *Alternative Strategies, indicating a set of Selected Action Parameters which can be used in Decision Making.*

Time or State	Sales	Margin	Price	Availability in Quantity	Availability in Quality	Sales Promotion	Cost
t= 1	S^1_{ij}	G^1_{ij}	P^1_{ij}	J^1_i	I^1_j	A^1_{ij}	C^1_{ij}
2	S^2_{ij}	G^2_{ij}	P^2_{ij}	J^2_i	I^2_j	A^2_{ij}	C^2_{ij}
...	...	...	...	...	...	...	...
n	S^n_{ij}	G^n_{ij}	P^n_{ij}	J^n_i	I^n_j	A^n_{ij}	C^n_{ij}

arrangements. This can be regarded as one aspect of policy making at the Executive level. An illustration of such a situation is summarized in Table 8 above. It indicates that given the values of certain action parameters there are no alternatives (i.e. horizontal lines) any one of which may be chosen by the Executive Committee for recommendation.

Each alternative strategy reflects the state or time required and seven action parameters to which estimated values can be given. Other alternative strategies can be created by altering the estimated values of some of the action parameters for each of a given alternative.

Alternative strategies are discussed and evaluated in terms of the objectives (e.g. sales volume), costs and time, until everyone or the majority of the participants are satisfied that every realistic alternative has been explored. The selected alternatives at this stage will be recommended for policy needs at the Board meetings.

The second policy making factor is concerned with the period which the policy will cover. It was indicated earlier that policies will be made on long term basis, namely 5 years or more. Such a period may be necessary for determining feasible operational adjustments. The third factor can be the degree of autonomy enjoyed by the Rice Administrative Board in relation to the Government (see Section 7-2) and to the Executive Committee (see Section 7-3).

Given these factors we may assume that policy making, for instance, at the Board level, can replicate the pattern as summarized in Table 8. The decisions made on any of such policies at the Board level will then serve as bases for recommending certain policy issues at the Government level. Hence policy making will be a continuous process of bargaining and interchanges between the Executive Committee and the Rice Administrative Board on the one hand, and between the Rice Administrative Board and the Government on the other. The essence of such a policy making process is that the Rice Administrative Board can obtain a series of feasible directives from the Government. In this way the Administrative Board could work out such business milieu that would be less susceptible to the effects of political changes. At the executive level the Rice Administrative Board could also obtain a number of bargains with the Executive Committee. Such bargains may provide

(1) adequate incentives and considerations on the participants.

(2) multilateral commitments in such a way that while the Rice Administrative

Board offers incentives and support, the Executive Committee may pledge themselves to better performance.

(3) explicit limitations for policies on issues that may be negotiated

(4) means for keeping internal structure of the new organization intact and dynamic.

At this juncture we may remark that a bargained decision[193] is a joint decision arrived at through an agreement between the Rice Administrative Board and the Executive Committee. Since the Executive Committee is by definition a necessary part of the Rice Administrative Board at the firm level, it follows that any adopted decision will have better chances of being successfully carried out.

7-5. No Market Problems—An Illustration of the Model's Management Practices

In this section we shall sketch out, for illustration purpose only, how our model can be applied to the needs of the Rice Mills Unit in the 1973 74 operation year.[194]

From the records of the Rice Mills Unit there was a plan to purchase[195] about 220,000 bags of paddy at 12 cedis per bag in 1973 74 crop year. Such a purchase would be about 50 per cent of the expected output of the farmers in both Northern and Upper Regions. Paddy was to be milled by three firms which run 4 mills. The total volume of their milled products were estimated at about 113,000 bags of Gr.I, 119,000 bags of Gr.II and 2,300 bags of Gr.IV. The price of the 3 grades are respectively 19.00, 16.70 and 12.80 cedis.

The Manager of the Rice Mills Unit thinks that

> some serious problems about purchasing and milling are likely to ensue because of increased volume of activities.[196]

Inspite of the expected problems the Manager is ". . . determined to achieve . . .", for the first time in the history of the milling firms, ". . . a minimum profit margin of 10 per cent" . . . on the sale of its products.[197] And in order to achieve the objective, the records mentioned that prices for milled products have been reviewed to reflect milling costs. As a solution to the "no markets for the mills' rice", the records stated that

> All milled rice will be sold in bulk to the Ministry of Trade which will distribute it through the Logistics Committee.[198]

The contention is that the chosen distribution channel may add more problems to those already expected in purchasing and milling. The results of our analyses (Chapter 6) indicate that distribution by administrative means has not been and may not be, commercially, an effective technique. In the past it tended to affect the size and the variety of the markets that could have been effectively developed and maintained by a vertical integrated organization.

In the context of the suggested organization, we can observe that business transactions will be planned and directed on the basis of the diagram described in Fig. 6 to service the market. Operations can be based on the preconception that the expected profit margin could be achieved if the organization's local rice can find an effective acceptance in the markets.

A probable strategy for decision making and its implementation will be, that

(1) The purpose of such a plan is (a) to add the expected 10 per cent minimum profit margin for the Rice Mills Unit to the total profit margin that will be obtained from the sale of both local and imported rice during that year, (b) the sales of local rice will increase in relation to the sale of imported rice in certain markets.

(2) A number of private business firms can be persuaded to stock and market a certain quantity of local rice from the Rice Mills Unit. In addition to this certain segments of the consumer markets, for example, institutional consumers can be persuaded by Administrative action to buy local rice. Furthermore, since the model organization has virtual monopoly over rice importation, it can reduce the quantity that has to be imported and sold during the same year. Of course these processes are based on the assumption that other activities at each stage of the system are performed to ensure and maintain a steady flow of paddy and the three grades of rice between November 1973 and August 1974. And that certain quality measures, like the suggestion made in Appendix B-2, will be implemented in order to adapt the products to the taste of the consumers.

(3) Conditional sales techniques will be employed to penetrate and/or expand sales in the selected markets. For instance the sales of both local and imported rice can be effected on ratios of 1:1, 1.5:1 or 2:1. The effectiveness of conditional sales techniques can be increased by practising price discrimination between the local and imported rice.[199]

In this particular case the Executive Committee can be vested with powers to employ these and other techniques which they might consider effective in certain markets.

7-6. Advantages and Disadvantages of Vertical Integration

In Section 7-2 we discussed three motives for suggesting a vertical integrated system. We also noted that integration might be motivated by the advantages and the disadvantages that may accrue to the participants. On the other hand the direction of the integration process and the purpose of the action may have important effects on the advantages and the disadvantages. Consideration can be given to the factors we discussed under constraints in Section 5–6. Since the model is a suggestion, it follows that the advantages and the disadvantages can be stated as possibilities rather than hard facts.

Among possible advantages that may accrue to the farmers in the model are prompt purchases of paddy by both the Rice Mills Unit and the Buffer stock holders, better opportunity for increasing paddy production and more stability in paddy markets and incomes. On the other hand these advantages may be offset by the fact that they may not have other opportunities for increasing their income when prices in the open markets are higher than the guaranteed price, and when output might be reduced by the effects of ecological factors.

Advantages for the Rice Mills Unit may be

(1) a certainty in the supply of paddy at regular intervals

(2) better control of milling activities

(3) that the rate of stock-piling at the milling firms may be reduced because of the

Buffers and Storage Facilities

(4) stability in the management operations and distribution channel

(5) a certain portion of the preferential markets will be secured for its products.

The more probable disadvantages are that

(a) some marginal milling firms may be too expensive to operate but they have to be kept in business because of

(b) public opinion and Government action

(c) personal gratification of some employees may be slightly affected.

It is almost difficult to assign any advantages to the Ghana National Trading Corporation in this respect except that the process may

(i) offer another source of supplies

(ii) prompt services so that administrative delays in the issues of import licences or delivery delays can be reduced considerably

(ii) offer opportunities to expand or influence the milling operations of the Rice Mills Unit. This may give some personal gratification to the employees who have some expertise to sell.

The disadvantages may be

(1) difficulty in adopting rice which has little market acceptance for such conservative buyers as institutional consumers

(2) reduction in the size of margin that may be obtained from selling only imported rice

(3) increased costs of management and distribution

(4) inflexibility in operations

The Government may have the following advantages from the process:

(a) freed from the daily chores of operating and managing the Rice Mills Unit and attending to the numerous grievances of farmers

(b) reduction in financial commitments because the milling firms may in time be able to finance themselves from their profits

(c) economy on the use of limited managerial personnel

(d) reduction in the degree to which certain groups in the society use rice imports to bring political pressures upon the Governments.

The probable disadvantages are that

(i) direct Government control over the milling firms and pperhaps over the farmers will be weakened

(ii) reduction of political exploitation of certain intervention measures

Consumers may secure the following advantages:

(1) better marketing services and relatively stable distribution of local rice

(2) improvement in certain quality attributes of local rice

(3) lower prices.

The disadvantages may be more because

(a) additional profits or resuscitation of less profitable milling firms might increase both milling and distribution costs

(b) prices at the retail level may not decrease, but may even rise

(c) reduction in the sale of imported rice may compel some consumers to cultivate a new taste for local rice or seek other means of attaining satisfactory consumption

(d) in as much as the local rice and other imported rice is not nutritionally fortified, the incidence of such defficiency diseases as beriberi, stomatitis and burning feet may add to the disadvantages of adopting this type of rice.[200]

In conclusion we may remark that in this chapter we have discussed vertical

integration as actions taken to complete the interdependent relations among the interest groups. The purpose of the integration is to achieve the objectives of intervention. It was also considered that integration could provide more effective alternatives for some of the "no market" problems.

Integration may be motivated by the presence of certain institutional relations (Section 7-2), the advantages and the disadvantages which each of the interest group may secure in the process. Given the structure as described in Fig. 6, the Vertical Integrated Marketing System can be directed by a Rice Administrative Board from which an Executive Committee may be constituted. By this arrangement decision making can be reached through a process of negotiation. Its implementation can be more thorough and prompt.

8. Summary and suggestions for further studies

8-1. Overview

In this research we have tried to investigate the causes, nature and effects of intervention in the production and marketing of rice. Our attempt was prompted, mainly, by recent complaints that some farmers and milling firms have experienced difficulties in selling their paddy and/or rice. Such complaints were popularly phrased as "no markets" for farmers' crops. In the course of the research we noticed that the term "no market" has a wider connotation and a long history. We have concentrated our research on some aspects of the present "no market" problems, and for the solution of this problem a model has been suggested in Chapter 7. A summary of the research and proposals for further studies are provided below.

8-2. Summary of the Research

Our analyses of available information indicated that in Ghana rice is relatively important being one of the basic sources of energy (calories) to urban consumers. It has therefore been one of the major commercial crops for the businessmen who have organized its production, importation and distribution. In recent years rice has been essential to the Government as an indirect means for influencing market behaviours of both consumers and the businessmen.

In our search for the causes of "no market problems" we stumbled upon a number of problem areas of which the inability of the extant marketing systems to equilibrate the supply of and the demand for rice (and other staples) has been a disturbing one to the Government.

The scanty information on pre-intervention marketing organizations suggests that rice had been produced in relatively large quantities and in fairly good quality, but its distribution had remained almost an exclusive occupation of the peasant farmers and private unit traders from the Indigenous Distribution Systems. A combination of such factors as small-scale production, which were often located in areas that could be reached only by foot-paths, inadequate communication, transport and storage facilities have had deleterous effects. In addition to these factors, we have noticed that farmers and traders appeared insensitive to their managerial inadequacies. Owing to such weaknesses of the Indigenous Distribution Systems certain staples, including rice, were relatively scarce on many urban markets. Scarcity can also be attributed to the growth in urbanization and the demand for food, and the absence of better means for estimating the level of domestic production. Rice has therefore been imported to mitigate shortages. Imported rice was distributed mainly by foreign firms which had been operating in the Expatriate Marketing Systems.

Among numerous reasons that prompted Government intervention in the production and marketing of rice, we noticed that the relatively high dependence of urban consumers (especially in the South) on imported rice has been essential in connection with the actions taken in 1926 and 1963. Some businessmen felt that it was their undeniable right to turn to the Government for assistance in a business that seems to have suffered from prolonged neglect. We also observed that by the turn of the 1960s business was attracting the attention of politicians and the Government. The effects of other reasons such as the dwindling foreign exchange reserve, trade deficits, and the availability of suppliers credit, called for more serious actions—intervention—by the Government.

Conceptually, intervention could be both a set of actions taken in response to certain demands for better performance of business firms and other interest groups in an existing marketing system and on introduction of entirely new procedures that did not exist before. This is partly the concept of intervention we adopted in Chapter 2 for defining also, the system's approach to large-scale commercial rice production in which "markets" are some of the elements for expressing certain types of interdependent behaviours, such as buying and selling, in the system. As behaviour expresses the performance of certain tasks in certain ways to achieve one's goals, it was more appropriate to think of marketing in the above-mentioned behavioral terms, namely, goals, tasks or business transactions and the techniques employed to carry out the tasks.

In the context of the post-1963 intervention we noticed that a set of large-scale actions had been taken at different levels such as the farming, milling and distribution of both local and imported rice, in order to achieve some predetermined goals (Chapter 5). It has somehow been difficult to substantiate the choice of large-scale commercial rice production in an area where a previous intervention had been a failure. The situation seems more puzzling when consideration is given to the fact that the foreign exchange reserves had been virtually exhausted when the 15 Hansetta mills arrived in 1964.

Intervention had (a) encouraged some farmers to specialize in commercial production of paddy, (b) introduced a number of new hybrid varieties of rice into the industry, (c) tended to stabilize paddy prices and incomes of those farmers and (d) a decreasing effect on the scarcity of other foodstuffs. In spite of these achievements the performance of the milling firms has been unimpressive, especially, in relation to the supply of rice.

At this point we can mention some of the effects of intervention on the "no market" problems.

There has been an occasional stock-piling and inability of some of the farmers and the milling firms to sell their paddy and/or rice. The study has shown that the occurrence of this particular type of "no market" problem can be attributed to certain intrinsic features of intervention: inadequate coordination of the participating institutions and business firms and their activities; the management of these institutions as separate entities by administrative means which are more susceptible to political pressures; competition from imported rice; low quality attributes, etc.

Under the present channel arrangement, certain aspects of the "no market" situation can still be regarded as problems because

(i) at certain times of the crop year paddy purchases and the movement of rice from the Rice Mills Unit will slacken

(ii) the quality of rice from the Rice Mills Unit may tend to reduce its

competitiveness vis-à-vis imported rice in such important markets as the institutional consumers

(iii) as there is no unified action, it will be difficult to acquire the relevant information on rice supplies, and changing trends in consumer demand for future marketing purposes.

Owing to these factors it seems difficult, now, to foretell the degree of, how and when a self-sufficiency in rice can be attained. On the other hand operating a vertically integrated marketing system can be a better alternative. It will be more purposeful, market-oriented and may operate at convenient costs to the Government, the business firms and the consumers.

8-3. Suggestions for Further Studies

Based on the study we have just reported, the following problem formulations are only a few examples of functional dimensions of the concept of intervention. It is hoped that they will stimulate the interests of research-oriented investigators who are likely to pursue similar projects in the near future.

1. An important aspect of the current "no market" problem is that the milling firms cannot produce the type of rice that can easily be adopted by both distributors and the consumers. Areas that require further investigations can be associated with *product development* as follows: What are the causes of "stickiness" in certain varieties of rice? What processes can be adopted by the milling firms to reduce or eliminate inedible objects in their rice?

2. The study indicated that consumers' reluctance to adopt rice from these milling firms is due partly to the presence of a high percentage of brokens. The problem can be stated in this way: Why do the milling firms turn out a high percentage of brokens when their milling capacities have been under-utilized? Why have they not sought a way for improving upon the content of brokens in a given grade?

3. Increased rice or cereal consumption is a typical characteristic of urbanization. In Ghana urban growth is highest in the south where a large proportion of imported rice is also consumed. One of the marketing problems is to find out how these consumers can be influenced to buy more local rice in order to minimize rice imports?

4. Given the increased dependence of intervention on inputs which have been obtained from overseas and the present conditions in the markets that have been the suppliers, in what ways can such imports be reduced?

5. We observed that the present channel arrangement is not consistent with the types of roles that the milling firms were destined to play. The key question is, should the present channel be used at all and what improvement can be introduced to reduce its susceptibility to changes in the Government and other political situations?

6. As a residual formulation of suggested problems further investigations can be to determine the needs of the rice industry in

(a) such storage facilities which can be accessible to private businessmen as well as Government-contracted operators in the farming areas.

(b) motorized roads connecting production areas with consumption areas

(c) research facilities and personnel at all levels to provide a forum for generating and communicating information that may be relevant for problem-solving activities

(d) reducing losses that may be caused through untimely harvesting, inadequate

logistic facilities, infestation of all kinds, etc.

(e) standardization of quality attributes and

(f) more effective policies which might enhance the roles of both the Government and the private businessmen as developmental entrepreneurs in the Ghanaian economy.

Appendix A.1.

Statistics of local and imported rice, value of imported rice in relation to balance of payments on current account during 1957-1973.

Years	Rice Requirements						Balance of payments on current account ₵. mill.	Col. 6
	Total	Local		Imported				Col. 7 in %
	1000 L.T	1000 L.T	%	1000 L.T	%	Value in 1000 cedis		
	1	2	3	4	5	6	7	8
1957	33.1	14.8	35.5	18.3	64.5	2501	– 10.2	24.5
1958	27.9	14.0	50.1	13.9	49.9	1891	– 25.9	7.3
1959	50.3	16.9	33.6	33.4	66.4	4069	– 30.7	13.3
1960	47.4	18.6	39.3	28.8	60.7	3260	– 95.5	3.4
1961	63.4	17.6	27.8	46.3	72.2	5029	– 150.7	3.3
1962	89.3	18.6	20.8	70.7	79.2	7523	– 81.2	9.3
1963	44.9	18.6	41.4	26.3	58.6	2961	– 131.0	2.3
1964	63.5	24.5	38.6	39.0	61.4	3772	– 97.0	3.9
1965	48.2	18.6	38.6	29.6	61.4	3623	– 230.2	1.6
1966	63.1	16.7	26.2	48.2	73.8	6440	– 128.7	4.9
1967	63.9	24.5	38.5	39.4	61.5	6151	– 86.6	7.1
1968	57.5	27.4	47.7	30.1	52.3	6785	– 51.5	13.0
1969	57.0	29.4	51.6	27.6	48.4	6002	– 60.4	9.9
1970	90.1	37.9	42.1	52.2	57.9	10235	– 57.8	16.9
1971	76.3	41.7	54.7	34.6	45.3	5965	– 65.1[1]	9.2
1972[2]	82.8	43.6	52.7	39.2	47.3	7551	– 120.5	6.3
1973[2]	84.7	49.3	58.2	35.4	41.8	7758	– 85.5	9.1

Sources: FAO Production Yearbook 1972, Vol. 25. Table 25.
FAO Trade Yearbook, Vol. 26, Table 37, 1972.
UN Yearbook on National Account Statistics, 1971.
UN Statistical Yearbok, 1972 Tables 40 and 146.
[1] *Barclays International Review,* April 1972, p. 16: Deficits refer to visible trade alone.
[2] Central Bureau of Statistics: Personal communication.

Appendix A.2.

Per Capita Consumption of rice for 1958-1973.

Years	Population	Per Capita Consumption (in lbs)		
	1000	Local	Imported	Total
1	2	3	4	5
1958	4 345	7.30	7.10	14.4
1959	4 800	7.99	15.51	23.5
1960	6 727	6.16	9.64	15.8
1961	6 880	5.76	14.84	20.6
1962	6 995	6.00	22.60	28.6
1963	7 186	5.57	8.03	13.6
1964	7 380	7.52	11.78	19.3
1965	7 740	5.42	8.48	13.9
1966	7 945	4.62	13.18	17.8
1967	8 139	6.68	7.92	17.6
1968	8 376	7.39	8.01	15.4
1969	8 426	7.90	7.30	15.2
1970	8 540	9.91	13.69	23.6
1971	8 660	10.83	8.87	19.7
1972	8 770[1]	11.18	9.92	21.1
1973	8 894[1]	12.35	8.95	21.3
1974[2]	9 000	15.37	11.13	26.5
1975[2]	9 112	18.25	10.65	28.9

Sources: UN Demographic Yearbook 1972 (Rome)

[1] Central Bureau of Statistics—private communication.

[2] Our estimates.

Appendix A.3.

Local rice: Annual Average Marketing costs and Margins for Traders of Indigenous Distribution Systems.

Cost items, margins and price levels	Cedis per 100-lb-bag of rice			
	1958	1960	1969	1973
1. Paddy price per 150 lbs[1]	5.10	4.50	5.30	8.34
2. Transport from farms	0.25	0.30	0.35	0.30
3. Parboiling costs[2]	0.55	0.50	0.60	0.65
4. Milling costs[3]	0.30	0.35	0.60	0.80
Total processing costs	*6.20*	*5.65*	*6.85*	*10.09*
5. Transport to primary market	0.10	0.15	0.20	0.20
6. Market fees[4]	0.20	0.20	0.15	0.15
7. Processor's margin	0.69	0.55	0.80	1.10
1st. Trader's Purchase price	*7.19*	*6.55*	*8.00*	*11.54*
8. 1st. Trader's costs	0.45	0.55	0.65	0.50
9. 1st Trader's margin	1.10	1.00	1.20	1.30
2nd. Trader's purchase price	*8.74*	*8.10*	*9.85*	*13.34*
10. 2nd. Trader's costs	0.30	0.35	0.40	0.35
11. 2nd. Trader's margin	1.20	1.25	1.35	1.45
3rd. Trader's purchase price	*10.24*	*9.70*	*11.60*	*15.14*
12. 3rd. Trader's costs	0.26	0.30	0.40	0.60
13. 3rd. Trader's margin	1.30	1.40	1.20	1.30
Retailer's purchase price	*11.80*	*11.40*	*13.20*	*17.04*
14. Retailer's costs	0.25	0.30	0.25	0.45
15. Retailer's margin	1.70	1.70	1.85	1.95
Retailer's selling price	*13.75*	*13.40*	*15.30*	*19.44*

Sources: Interview data; *Weekly Market Bulletin*, Economics and Marketing Department of the Ministry of Agriculture (data for 1969 and 1973 are averages for 30 and 45 weeks per each year)

[1] at a rate of 66 per cent of milled equivalent.

[2] include capital costs such as bags, pots, bowls and other utensils and variable costs such as firewood, water and hired labour.

[3] technically, such costs cover hulling only.

[4] assumes that the processor stored rice at his residence.

Appendix A.4.

Imported Rice: Annual Average Marketing Costs and Margins for Traders in Expatriate Marketing Systems.

Cost items, margins and price levels	Cedis per 100-lb-bag of rice			
	1958[1]	1960[1]	1969[2]	1973[2]
1. Price[3]	6.10	5.05	9.30	9.80
2. Insurance	0.10	0.15	0.20	0.25
3. Freight	0.45	0.50	0.60	0.65
4. Import duty	3.50	3.50	2.50	2.50
5. Port handling costs	0.15	0.15	0.25	0.40
6. Bank charges	0.20	0.35	0.55	0.65
Total Importer's costs[4]	*10.50*	*9.70*	*13.30*	*14.65*
7. Importer's margin	1.10	1.20	1.60	1.85
8. Wholesaler's Purchase Price	*11.60*	*10.90*	*14.90*	*16.50*
9. Wholesaler's storage costs	0.25	0.30	0.45	0.70
10. Wholesaler's margin	1.00	1.15	1.50	1.60
11. Retailer's Purchase Price	*12.85*	*12.35*	*16.85*	*18.80*
12. Retailer's operational costs	0.25	0.35	0.50	0.60
13. Sales tax	0.15	0.20	0.35	0.45
14. Retailer's margin	1.20	1.35	1.60	1.80
Retailer's Selling Price	*14.45*	*14.25*	*19.30*	*21.65*

Sources: Interview data from (1) United Africa Company and (2) Ghana National Trading Corporation; Ghana Sector Studies: Grain Marketing, Transport and Storage. Accra: Ministry of Finance and Economic Planning, 1970, page 39.

[3] FOB price of US rice No. 5.

[4] assumes that the importer did not incur any storage costs, and that storage is a wholesale function.

N.B. other important source of data on freight costs is Sherman, W.R., *A Study of Production Costs for Rice and Maize*. Research Memorandum No. 13. Accra: USAID Mission to Ghana, 1969, page 7.

Appendix A.5.

Acreage sown under paddy, yield, losses and marketable surplus for Northern and Upper Regions for 1962/63, 1966/67 and 1969/70-1973/74.

Years	Acreage planted		Paddy yield (bags)		Total paddy (bags)	Harvest losses (bags) 25%[1]	Own consumption (bags) 5%[1]	Marketable surpluses (bags)
	Upper	Northern	Upper	Northern				
1	2	3	4	5	6	7	8	9
1. 1962/63	4,000	7,000	12,000[2]	21,000[2]	33,000	- 8,250	- 1,650	23,100
2. 1966/67	10,000	15,000	35,000	52,500[2]	87,500	- 21,750	- 4.350	61,400
3. 1969/70	12,000	20,000	42,000[2]	70,000[2]	112,000	- 28,000	- 5,600	78,400
4. 1970/71	18,000[3]	30,000[3]	72,000	120,000	192,000	- 48,400	- 9,600	134.000
5. 1971/72	20,000[4]	40.000[4]	85,000	170,000	235,000	- 58,750	-11,750	164,500
6. 1972/73	22,000[5]	42,000[5]	95,000	180,000	275,000	- 68,750	-13,750	192,500
7. 1973/74[6]	24,000	50,000	144,000	300,000	444,000	-112,000	-22,200	309,800

Sources: Economics and Statistics Division, Ministry of Agriculture, (Personal communication); Documents from Rice Mills Unit, Tamale; *FAO Production Yearbook,* 1973.

[1] Estimates, from the Ministry of Agriculture.

[2] Average yield per acre was about 3.5 bags.

[3] one-third of these lands was sown under variety C4.63, which yielded an average of about 5 bags per acre.

[4] One-half of these lands was sown under variety C4.63.

[5] 12,000 and 22,000 acres were sown under variety C4.63.

[6] Planned objectives.

Appendix A.6.

Table A.6.1. *Paddy Price for 1970/71-1972/73*

Years	Price (cedis)	Quantity (bags)
1970/71	8.00	62,000
1971/72:		
November 1971—Mid-February 1972	8.00	35,000
Mid-February—October 1972	9.00	20,000
1972/73	10.00	35,000

Table A.6.2. *Milled Products of Rice Mills Unit*

Products	Milled rice in % of paddy weight	Weight per bag (lbs)	1970/71 (bags)	1971/72 (bags)	1972/73 (bags)
RICE:					
Grade I	28.5	100	23,213	26,209	14,839
Grade II	11.5	100	14,993	11,078	20,455
Grade III	18.5	100	12,122	16,277	3
Grade IV	1.2	240	899	721	609
Bran	6.0	120	4,312	4,870	4,074

Table A.6.3. *Selling Prices for Milled Products*

Products	Weight/bag lbs	1970/71 (cedis)	1971/72 (cedis)	1972/73 (cedis)
Grade I	100	11.00	13.00	17.00
				16.50
				14.50
Grade II	100	8.00	10.00	12.50
Grade III	100	5.00	8.00	11.50
			5.00	
Grade IV	240	—	10.00	10.00
Bran	120	2.50	2.50	5.00
				3.50

Source: Ampah. J. B., op.cit. Appendix IV.

Appendix A.7.

Excerpts from the Planned Operations of The Rice Mills Unit for November 1973 - October 1974.

1. Paddy Purchase:

Total quantity (bags)	220,380
Price per bag (cedis)	12
Total value (cedis)	2,644,580

2. Financial Needs:

Loan (cedis)	2,200,000
Investment capital (cedis)	160,900

3. Storage Facilities:

Total capacities (bags)	235,000

4. Milling Activities:

Total capacities of 3 + 1 mills/20 bags/hr for three shifts (bags)	1,920
Milling days	260

5. Milling Output and value:

Milled Products	Quantity (bags)	Price/bag (cedis)	Total Value (cedis)	Profit at 10% (cedis)
Grade I	113,280	19.00	2,152,320	215,232
Grade II	118,600	16.70	1,906,545	190,655
Grade IV	2,280	12.80	29,184	2,918
Bran	19,670	3.80	60,584	6,058
Total			4,148,633	414,863

Source: Ampah. J. B., op.cit. Appendix VII.

Appendix B.1.

Economic Uses of Rice and Its by-products

B.1.1. *Overview*

Rice is produced almost entirely for human consumption. However, the amount of rice that can be sold at the processing stage will depend on the milling out-turn of whole heads. Based on data from the Rice Mills Unit the average milling out-turn from a bag of 180 lbs paddy consists of

Whole heads	45 lbs	25 per cent
Brokens of all sizes	43 lbs	24 per cent
Chips	18 lbs	10 per cent
Bran	30 lbs	16 per cent
Husks	30 lbs	16 per cent
Extraneous objects	14 lbs	8 per cent

These figures varied in relation to the variety, age, moisture content and the degree of milling. Variations existed among the milling firms operating under the Rice Mills Unit. Depending on the type of quality and grade we wish to produce (CF. Appendix B.2.) brokens can be mixed in varying proportions with the whole heads. We can assume that only 49 per cent of the milling out-turn can be good for human consumption. The remaining 51 per cent constitute by-products which can be sold to other industries like poultry and animal farming.

The cost of producing and distributing rice can be reduced considerably, if some uses could be found for the by-products bran, chips and husks (and the straw). It has become a common sight on the dumping grounds of Tamale Rice Mills, for example, local women winnowing the dumped husks which pass as "waste" for unmilled paddy. In addition to the uses the local women make of the "waste" we can draw on the stock of knowledge and experiences in the economic uses of rice and its by-products outside Ghana.

The aim of this appendix is to provide some sketchy information gleaned from the literature on rice. It is hoped that the information may offer opportunities for expanding and diversifying the markets for rice and its by-products in Ghana.

B-2. *Some of the Products that can be derived from Rice*

Rice is used as a base for manufacturing industrial starch and breakfast products. It can also be used for savouring, seasoning or for dressing other food items. Some of these products and their uses are discussed below.

B-2.1. *Industrial Starch and its Uses*

Industrial starch can be manufactured from rice of low protein content. Low-protein rice has an unpleasant taste and a low storage life. It has little nutritional value. Beside low-protein rice, industrial starch can be manufactured from brokens, chips and sometimes from bran. As much as 85 kg of starch can be obtained from every 100 kg of rice.

Starch obtained from rice can be used

(a) as a finishing agent in the textile industries

(b) for starching clothings in laundries

(c) as a base for manufacturing cosmetic powders

(d) for manufacturing alcoholic beverages such as *sake* in Japan, *arrack* in China and the Philippines, wine in China and Japan.

(e) as good substitute for malt in beer brewing in New Orleans, USA.

(f) for producing slops for feeding cattle or pigs

(g) as an ingredient with wheat or maize flour to manufacture bread.

The by-products from the production of alcoholic beverages contain yeast and other nutrients which can be used in baking and in feeding stuffs for animals. Another by-product in the manufacture of rice starch is a liquid which contains about 14 per cent of water, 1 per cent of "raw proteins", 1 per cent of ashes and another 1 per cent of "raw fibre".[201] When this liquid is

neutralized with sulphuric acid, the proteins are released in the form of wet glutinous precipitate which is difficult to dry. From this precipitate "rice glutin meal" or "slops" can be manufactured for feeding cattle and pigs, while the remaining water can be used to fertilize the paddy fields or nurseries.

B-2.2. *Breakfast Products*

Beside industrial starch breakfast products can be manufactured from rice. The most marketed products are

(1) *Puffed rice.* It is manufactured in the following manner: Hulled rice is soaked in a solution containing sugar, dyer and other nutrients. It is then steamed under pressure of 12-16 atmospheres so that the kernels expand and increase in volume.

(2) *Rice Flakes.* They are manufactured in the same way as flaked oats.

B-3. *Milling By-products and their Uses*

Two by-products which have commercial value are husks and bran. Chips are normally mixed with rice bran. In cases where chips are separated from rice bran, as at the Mencilo Rice Mill, Tamale, they are sold as fodder for poultry and animal farms.

B-3.1. *Uses of Rice Bran*

Bran and chips together form about 13 per cent of the milling out-turn. Bran contains 14-17 per cent *fat* of which up to 9 per cent is *wax* which is very similar to carnauba wax, and which, has very wide industrial and economic uses. Bran also contains as much as 12 per cent proteins, about 50 per cent soluble carbohydrates and about 7 per cent fibre. Bran is valuable only after it has been subjected to further processing.

By hydrogenation rice oil can be extracted from bran. It is then refined to free the fatty substances which may be used for making soap. Refined bran-oil has good cooking qualities. However, it may find a higher value as a carrier for insecticides, anti-corrosion and rustresistent oils; as bases in cosmetics and pharmaceuticals, etc.

When bran has been refined for other substances the residue, mainly protenaceous carbohydrate, can be added to feed-grade molasses to make mixed feed formulations.

B-3.2. *Uses of Husks*

Husks have no food value for human beings but they have properties which have a large range of economic uses. One of the properties is that husks have a heat value of between 5,000 and 6,000 B.t.u per pound. Husks can therefore provide sufficient energy to run the rice mill itself. By the same property husks can be used to manufacture explosives.

Husks can be used

(a) when charred, as a substitute for bone black in refining sugar at the Asutuare or Komenda Sugar Factories.

(b) as packing material for delicate and fragile chinaware, eggs, etc.

(c) as filling stuff for refrigerators and other devices as it is a poor conductor of heat.

(d) for fabricating concrete briquettes (of about 40 lb/ft^3). The briquettes are said to be waterproof, durable and capable of carrying heavy loads. A whole block of flats has been constructed from such bricks in Great Britain. Other fabricated building materials are insulating bricks for furnaces.

(e) for manufacturing pressed insulating boards, paper and hard boards

(f) as stable litter, as soil conditioner, as fertilizer and/or supporting medium for growing vegetables hydroponically

(g) in the glass industry because it contains high quantities of silica. The same property increases its value as feeding stuff for animals

(h) to produce alcohol which has as good qualities as wood alcohol by the method of cellulose saccharification

(i) for manufacturing furfural (by adding sulphuric acid to husk ash and distilling the mixture under steam pressure), which can be used for a number of purposes: such as synthetic resins and

solvents absorbent detergents, *weed killers,* wood preservers and as a chemical constituent of nylon

(j) as abrasives which are used in industrial blast cleaning and polishings.

B-4. *Uses of Rice Straw*

Rice straw is a by-product of the farm. It has a number of valuable uses of which the following are worth mentioning. The straws of paddy

(1) has been successfully used for manufacturing straw and building boards in Korea

(2) has been used for braiding in Japan

(3) has been used for mulching pineapple in Taiwan

(4) has been used for cultivating mushrooms in China, Japan and the Philippines. The Volvaria esculenta mushroom is grown on rice straw which has been chopped and moistened with water in which rice has been boiled. (Mushroom cultivation may be carried out near parboiling plants or mills in Ghana.)

(5) Some substances have been added to burnt straw to produce lye for washing hair and or used as abortifacient.

(6) By mixing soil, straw ash and emulsified asphalt soil-ash bricks, which readily absorb atomic radiation, can be obtained.

(7) Straw ash can be used as top dressing 15 days before transplanting seedlings. Such application promotes faster root growth. It has been used with much success in Japan.

In 1972, Abudu Sumani, a technician of Mencilo Rice Mills, successfully carried out a similar experiment near the mill.

(8) Straw can be ensilaged for cattle feedstuffs. Fresh straw has poor nutrient content. It must therefore be added to cassava, sugar molasses and other fooder concentrates to feed milch cows and bullocks.

(9) Straw of glutinous paddy is thin and pliable. It can be used for weaving baskets and for making mats, hats and ropes.

Appendix B.2.

Suggested Quality Standards and Grades for Rice Moving in the Marketing Systems

B.1. *Introduction*

About 5,000 varieties of paddy are known in Ghana today. Varietal differences make it impossible to cover the entire range of commercialized variety found in Ghanaian markets. It has been difficult, in some cases, to determine the quality of the varieties which have gained commercial acceptability.

The aim of this appendix is to suggest a model by which marketable rice could be graded and standardized in relation to certain quality limiting factors, grading procedures and their implementation.

B.2. *Quality-Limiting Factors*

The following factors are considered:

(i) The percentage of contrasting classes where, the size, length or shape of the kernel differs distinctively from the dominant class of the whole sample or on the basis of a part not less than 50 gm of the original sample.

(ii) Percentage of inedible objects. These objects can be small shiny stones which may pass for a kernel, husk remains, sticks leaves, weed seeds, damaged kernels, etc. This per centage should be taken in relation to a sample of 100 gm.

(iii) Contaminated rice through insect infestation—live or dead, insect webbing, debris or refuse

— by rats, mice, termites, weevils, etc.[202]
— by fungous growth on the surfaces of kernels.

(iv) Percentage of ungelatinized kernels of parboiled rice in the sample.

(v) Odours, musty, sour or commercially objectionable odours or colours on the basis of the sample.[202]

(vi) The colour of kernels in the sample should be

— white
— creamy
— slightly grey

} for glazed, polished, oiled or coated kernels of raw milled rice.

and

— light brown for parboiled rice

(vii) The degree of milling can be categorized as

— under-milled: where the husks and part of the outer bran layers have been removed.
— medium-milled: an improvement over under-milled rice, plus the removal of part of inner bran layer.
— well-milled: removal of husks and bran layers from the kernel.

(viii) The age of rice. This is normally associated with the degree of maturity. It may also refer to the length of time the rice has been in storage.

(ix) General appearance of the grains. This factor summarizes physical attributes which may be acquired during minor milling or processing, transporting or storage, so as to determine marketability or whether the grains should be reprocessed.

(x) Percentage of protein content in sampled grains.[202] Such data can be obtained from the farms or buying agents. This factor is needed to determine the premilling processes paddy should undergo. For example, should it be parboiled, under- or medium- milled or should it be fortified with the needed percentage of proteins and other nutrients.

(xi) The moisture content. This factor is needed to determine both milling and storage quality of paddy and rice.

The sources of these quality-limiting factors are two-fold:

(a) A factor may be *intrinsic* and so may refer to varietal characteristics such as size, shape, weight and protein content.

(b) A factor may also be *acquired* at the farm level, during processing and / or storage of paddy and rice. Packaging is an important acquired characteristics, because contrasting classes of rice are sorted out and packed into uniform classes, so that each class can be distinguished from others.

Some of these factors can be traced to three stages of the distribution channel, as below.

Stage in the channel	*Associated quality-limiting factors*
Farm	i. Paddy of contrasting varieties ii. Paddy of different classes iii. Percentage of inedible objects iv. Percentage of moisture content (can be determined by the degree of maturity or ripeness at time of harvest or threshing).
Processing	i. Commercially objectionable odours ii. Degree of milling iii. Percentage of contrasting classes iv. Moisture content of grains v. Milling skills of personnels.
Storage	i. Percentage of moisture content of kernels ii. General appearance of grains iii. Degree of contamination by — insect infestation, e.g. weevils — fungous growth, e.g. moulds — discoloration and odours iv. Age of stored rice

B.3. *General Procedures for Quality Grades*

In order to simplify the grading system, the model to be suggested will be based on the differences between intrinsic and acquired characteristics. The quality of rice should be determined by the following procedures:

1. Classes of commercially accepted rice should be sorted into

i. Extra long-grained
ii. Long-grained
iii. Medium-grained and
iv. Short-grained.

These classes may be qualified by the adjective, "parboiled", or "glutinous", whenever it is applicable. Without either of these two adjectives, rice will be regarded as "non-glutinous" and "raw-milled".

2. Sampling should be carried out as follows: a 100 grammes each of 4 samples should be taken from 4 different levels or parts of each bag. Samples should be taken with grain probes or with such means that may be approved by the Extension Officers or the quality control officer at the mills and purchasing stations. Samples which have been purchased from commercial sources have to be examined for such quality-limiting factors as those used for the four grades in Tables B.2.a. through B.2.d.

3. Grading Certificates. Grading certificates should be issued on rice which has satisfied the quality demands of each grade. Grading certificates should reflect the following:

(a) *Grades* of which four have been considered in this model

(b) *Grade designations*. Grade designations are inscribed in a circle giving the abbreviation of the word "grade", GR, and the number of the particular grade, e.g., I (See Table B.2.a.) Grade designations should be shown on the bags or any approved packages in which rice is sold.

(c) *Specifications* should indicate the following which should also be written on bags and other approved packages:

(i) Variety (optional)

(ii) Class, e.g. long-, medium- or short-grain.

(iii) Weight, e.g. 100 lbs, 10 lbs, 5 lbs, 1 lb.

(iv) Registered trade mark, if any, of the firms producing it. Such a trade mark can be a brand name.

(v) Purpose, e.g. for breakfast dishes (porridge), for dumplings (tuo, kenkey), for meals (plain rice, jollof rice).

(vi) Cooking suggestions can show

1. the ratio of uncooked to cooked rice, e.g. 1/4 lb yields 12 or 13 portions or servings of cooked rice.
2. quantity of rice and water needed for a given number of portions or servings.
3. cooking methods for both sticky and non-sticky rice. Cooking time may also be indicated. Cooking methods can be effectively explained both in words and by illustration.

(vii) Optional: One or two recipes can be written on retail packages.

Table B.2.a. *Schedule for Grade I*

Quality Factors	Tolerant Limits in percentage		
	Long	Medium	Short
A. *Processing*			
Rice of single variety[1]	100.0	100.0	100.0
Whole heads	95.0	95.0	95.0
Three-quarter brokens	5.0	5.0	5.0
Chalky kernels	10-15	10-15	10-15
Degree of milling[2]	90.0	90.0	90.0
B. *Storage*			
Moisture content	11-14	11-14	11-14
General appearance[2]	100.0	100.0	100.0
C. *Grade mark*	GR-I		

Notes: 1. It is assumed that each variety will be cultivated and harvested separately to maintain its purity. By the same token each variety should be milled separately.

2. The degree of milling should be determined by both the nutritional values of each variety (to be obtained from Seed Breeders of the Research Stations at Kpong and Kpeve) and technical possibilities. Therefore, the general appearance (or whiteness of grains) should be related to the degree of milling and by the colour of the dominant variety over "chalky" grains. Whiteness and chalkiness do not mean the same thing in this respect (see point vi of Section B.2.2.

Table B.2.b. *Schedule for Grade II*

Quality Factors	Tolerant limits in percentage		
	Long	Medium	Short
A. Processing			
Rice of single variety[1]	100.0	100.0	100.0
Whole heads	70.0	70.0	70.0
Three-quarter brokens	30.0	30.0	30.0
Chalky grains	30.0	30.0	30.0
Degree of milling[2]	90.0	90.0	90.0
B. Storage			
Moisture content	11-14	11-14	11-14
General appearance[2]	90.0	90.0	90.0
C. Grade mark	GR-II		

Notes: 1 and 2. See notes in Table B.2.a.

Table B.2.c. *Schedule for Grade III*

Quality factors	Tolerant limits in per cent		
	Long	Medium	Short
A. *Processing*			
Rice of single variety[1]	100.0	100.0	100.0
Whole heads	50.0	50.0	50.0
Three-quarter brokens	30.0	30.0	30.0
Half brokens	20.0	20.0	20.0
Chalky grains	30.0	30.0	30.0
Degree of milling[2]	90.0	90.0	90.0
B. *Storage*			
Moisture content	11-14	11-14	11-14
General appearance[2]	90.0	90.0	90.0
C. *Grade mark*	GR-III		

Notes: 1 and 2. see notes in Table B.2.a.

Table B.2.d. *Schedule for Grade IV*

Quality factors	Tolerant limits in per cent		
	Long	Medium	Short
A. Processing			
Rice of single variety[1]	100.0	100.0	100.0
Whole heads	30.0	30.0	30.0
Three-quarter brokens	30-35	30-35	30-35
Half brokens	30-35	30-35	30-35
Chalky grains	30-40	30-40	30-40
Degree of milling[2]	90-95	90-95	90-95
B. Storage			
Moisture content of grains	11-14	11-14	11-14
General appearance[2]	90-95	90-95	90-95
Degree of contamination:			
i. Discolouration	0.5-1	0.5-1	0.5-1
ii. fungous growth[3]	—	—	—
iii. insect infestation[3]	—	—	—
C. Grade mark	GR-IV		

Notes: 1 and 2. see notes in Table B.2.a.

3. only traces (otherwise higher degree of contamination by these factors should render the grade unfit for human consumption).

Appendix B.3.

Analysis of Evidence from Studies and Proceedings of 1970 Conference on Rice Production

B.3.1. *Overview*

There are few studies written on rice marketing in Ghana. Two conferences have been held in 1968 and in 1970 to discuss some of the problems and to recommend steps for an effective intervention policy on rice. Materials on 1968 Conference was not available at the time of writing. In this chapter some of those studies and articles from the Proceedings of 1970 Conference on rice production[203] will be analyzed.

Three objectives have been considered. The analysis is intended to give a better perspective of the course of events and the types of suggested recommendations. Secondly, the analysis may be used as supportive evidence to Chapter 4. Thirdly, it may serve as a basis for choosing concepts and suggestions for further discussions in Chapters 5 and 6.

This analysis will be presented as follows: A general description of selected studies and articles is pursued in Section B.3.2. Section B.3.3. is devoted to summaries of basic ideas from these documents. In Section B.3.4. some remarks on these ideas are given.

B.3.2. *Description of Selected Documents*

To begin with, most of the relevant documents have been cited in their appropriate connections in the report. Here we shall discuss three of the studies made by expatriates and four articles from the Proceedings of 1970 Conference on rice production.

For the sake of chronology, we can mention Coombes's study, which was written in 1952, on the Esiama Rice Mill. This study analyzes engineering problems and some economic aspects of the Mill's operations. The part which is relevant to this research has been discussed in Section 3-2 of this report.

Reusse's studies on Ghana's Food Industries (1968) contains thirteen pages on the economics of rice production. He describes Government intervention measures at the farm and milling stages of the distribution channel. His analysis of 1966/67 operations of Tamale Rice Mill exemplifies intervention at the milling stage of the distribution channel.

In his study Reusse attempts to draw a comparison between the Tamale Rice Mill and the Traditional Processors in terms of operational costs, the use of capital facilities and the quality of rice. His analysis shows that the Mill's activities are seriously undermined by the poor quality of the processed rice, competition from traditional processors and firms which import and market imported rice in Ghana. If the Mill is to realize its aims certain policy changes will be required in the near future.

For future policy considerations, Reusse suggests that the Mill should be run with the "best managerial and technical staff available". He concedes that this will require (a) experienced purchasing and storage policy, (b) imaginative sales policy . . . and (c) co-ordination by able authoritative management.[204]

In 1968, William R. Sherman, an Agricultural Economist of the US AID Mission to Ghana, wrote a memorandum on Ghanaian rice marketing systems.[205] This memorandum is a comprehensive analysis of rice marketing processes, alternative distribution channels, constraints which tended to inhibit and/or could be eliminated to increase efficiency of distribution channels.

In order of importance, he describes three distribution channels as being wholesale-middleman, co-operative and Government controlled marketing systems. He does not discuss the organizational structures of any of these channels. He maintains that, although the marketing system depends greatly on the wholesale-middleman system, the co-operative marketing societies could[206]

. . . create ésprit de corps which is a precondition for a long-range consistent program of group action.

Sherman considers direct Government intervention only as an alternative to co-operative marketing societies. In his opinion, Government intervention should be limited to providing few

services such as storage and transport facilities, mechanical dryers and concrete platforms for drying purposes. The reason, he claims, is that it is more difficult to stabilize prices on wholesale and, or retail markets than to do so at the farmer-miller segment of the distribution channel.

Based on production cost data collected by the Ministry of Agriculture Sherman investigates the effects of guaranteed minimum price on farmers' output.[207] The study shows that unweighted average production cost per bag of paddy was about 19 cedis 15 pesewas for the 50 farmers interviewed. The average cost per bag of 180 lbs of paddy was 3 cedis 64 pesewas. He concludes that the 1969 guaranteed minimum price of 7 cedis 50 pesewas per bag of paddy was sufficient to step up production. But farm output appeared to have been constrained by some of the factors we have discussed in Section 3-7.

The Proceedings of the 1970 conference on rice production was compiled under the chairmanship of J. A. Agyare. He was then the Rice Research Co-ordinator of the Ministry of Agriculture. The Proceedings can be regarded as an attempt to assemble works of the various institutions connected with the rice programme. The articles in this document can be grouped under two subject-matter: production and marketing. We shall discuss some of them in the next section.

B.3.3. Excerpts from the 1970 Proceedings — a summary

In this section we shall summarize the papers presented by F. N. Ghartey, S. O. Larkai, C. T. Nelson and by A. W. Mark-Hansen.

Ghartey's paper[208] discusses "two of the conditions that should be provided to increase rice production. The first condition involves

> . . . the complicated process of growing rice in the field, research, marketing, processing, storage, price and import and export policy.[209]

The second condition refers to the need for a national policy which will accord special status to the industry in relation to other crops.[210]

A relatively large portion of the paper is dedicated to the "complicated process of growing paddy in the fields". There is a discussion of two pre-market tests of consumers' acceptance of variety C4.63. These tests show that consumer preference could be an important factor in rice production and rice policy. He concludes that as rice is eaten almost

> . . . without . . . any modification, the size, look and taste of the grain should be good and free from weed seeds and stones[211]

Ghartey suggests a production programme which aims at encouraging farmers to plant and fertilize increased acreage sown under variety C4.63, opening new lands for improved variety and the development of new seeds. He suggests also, that, the private sector can be encouraged to participate in rice production, because the growing demands of the industry may exceed Government ability and resources.

Nelson's paper seems to rely on the following three statements.[212] First, rice output can be increased in two ways, namely, by increased production and by reducing losses resulting from improper handling and storage.[213]

Secondly, the desired increase in rice supplies will depend on balanced expansion of such ancillary operations as processing, milling and storage.[214]

On these two statements, he argues that it is not sufficient to emphasize production alone. As such steps should be taken to reduce the quantity of broken kernels during milling to reduce the percentage of storage losses.

Thirdly, the amount of the crop available for consumption and its quality largely depends on the efficiency of the pre-processing milling and storage.[215]

On this point, Nelson analyzes the relationship between milling and nutritive values of rice. In principle, paddy is milled to obtain an attractive appearance that may be commensurate with cooking qualities and storage life. In order to retain much of the natural nutrients, paddy can be milled in such a way that high recovery rates of whole kernels can be obtained.

Mark-Hansen argues that in open markets paddy prices will depend on the "normal criteria of supply and demand". Local rice marketing, he says, has been practically monopolized by private entrepreneurs. And that through a system of loans, farmers were sometimes obliged to sell their paddy on unfavourable terms with enhanced profits to the middlemen.[216]

Among intervention objectives, Mark-Hansen maintains that Guaranteed Minimum Price

Scheme was introduced by the Government to "promote indirectly a more efficient general marketing pattern".[217] He then discusses a few aspects of the experiences of Food Marketing Corporation of which he was then the Managing Director. In his opinion, what Ghana needs is not so much the presence of mills in the country as the organization to be trusted with their operation. Three of his suggestions are that

(a) the Government-operated milling firms should be resuscitated so that their ability to raw-mill paddy without sacrificing the quality of the end product, reorganization costs, operating capacity and their role in the intervention may be clearly determined.

(b) In order to implement price stabilization policy, a centralized institution will be needed. It should be accorded sufficient autonomy to follow realistic price policies.

(c) In all these processes private firms or individual entrepreneurs can be encouraged to acquire mills for processing paddy.

He does not seem to favour active Government participation in such projects. His main reason is that there has been a tendency, in the past, for the Government

> ... to infiltrate into policy making machinery so much Civil Service redtape as to create confusion and cause delays in taking and implementing decisions of importance to the industry.[219]

On the question of delays, S. K. Ankomah, a Regional Agricultural Officer of the Ministry of Agriculture, suggests that

> an approach (should) be made to the commercial firms which import rice to contribute to a fund which will be used by the Rice Marketing Committees in buying paddy from farmers.[219]

On the marketing of rice, Ankomah suggests that it should be sold back to the commercial firms.[220] He believes that this type of arrangement would ensure regular purchases of paddy. He also feels that it would enable those firms to recover their invested capital and that rice imports would be minimized as well.[221]

S. O. Larkai, a Representative of the Ministry of Trade to the Conference, says that it has not been possible to reduce rice imports. He maintains that reduction of rice imports would, in future, be related to the "measure of increase in local production".[222] As a temporary measure an import duty of about 56 cedis per ton has been instituted.

B-3.4. *Remarks on Selected Documents*

The following remarks may be made on the documents reviewed in this appendix.

1. They emphasize the production aspect of intervention. Illustrations can be drawn from Ghartey's conditions for rice production and Nelson's arguments for increased output.

2. Each of the authors deal with one or few aspects of the market for paddy farmers in particular. This can be exemplified by the studies and articles of Coombes, Sherman, Mark-Hansen and by Ankomah's suggestion.

3. Some of the authors emphasize the importance of consumer preference or taste and other nutritional requirements as

(a) an effective parameter in the choice of paddy variety for cultivation in Ghartey's, Nelson's and Reusse's works.

(b) a determinant of the degree of milling and storage life in Nelson's article, and as

(c) a determinant of sales, competition and price policies in Reusse's, Sherman's, Mark-Hansen's and in Ghartey's works.

4. Recommendations for co-ordination are made by Reusse, Ghartey, Mark-Hansen and Sherman. The need for co-ordinated action was also discussed at the 1968 conference. Co-ordinated action is discussed in terms of institutions directly connected with paddy production and its purchases by the milling firms operated by the Government. The results of 1970 conference indicate that any set of co-ordinated actions which ought to be taken in future will have to be extended over other markets found in the distribution channel. The fact is that paddy has to be milled before it can be sold for whatever purpose it might be designated. Therefore the markets for paddy and rice require co-ordination. Thus Mark-Hansen's demand for a centrally managed institution to implement price stabilization is a relevant factor to be considered in any co-ordinated action.

In this appendix only a few of the diverse ideas of the authors have been discussed. Some of them had considerable influence on decision making and its implementation. It is therefore

possible that their ideas and recommendations could have contributed to a 'slackness' in the markets, and the inability of the Rice Mills Unit to sell its rice. In relation to other studies and literature on agricultural marketing we notice that there is no unanimity among the authors regarding the number of activities and their classifications. For instance, in the concept of agricultural marketing, La-Anyane has in mind such activities as

. . . transportation, assembling of raw materials, processing, where necessary, storage, grading, standardization, packaging, financing and adequate market intelligence.[223]

This set of activities compares favourable with the set we have just discussed. However, La-Anyane remarks that

. . . many of these activities are not performed in present-day marketing of agricultural products in Ghana.[224]

Appendix B.4.

Business Activities

B-4.1. *Overview.*

In the concept of marketing it was stated that the interest groups perform certain business transactions in the system. These transactions consist of activities some of which may be performed exclusively by a given institution at a specific stage of the distribution channel. For example such activities as variety selection and breeding, trials of selected varieties of paddy, their commercial cultivation and harvesting are carried out respectively at the crop research and farming stages of the channel. At the processing stage of the channel activities like cleaning paddy of extraneous objects, parboiling, milling and bagging may be performed.

Beside these specific activities there are others which may be carried out by all the interest groups in the system. We shall indicate the types of activities performed and relate them to some of the functions they serve. Each activity consists of several closely related tasks. We have grouped them under three functions, namely, the function of physical supply, facilitating functions and functions connected with the transfer of ownership.

B-4.2. *Functions of Physical Supply*

Under this function we have chosen four different activities which are related to physical supply.

a) *Bulking* implies collection of several quantities of paddy into economic sizes at the buying stations. The purchasing officer buys them at the guaranteed minimum price, pays cash for small puchases and issues cheques for large quantities; they submit weekly returns of purchases to the milling firms and to the information centre within the system. Bulking may be performed by the institutions designated for holding buffer stocks or inventories of both paddy and rice.

b) *Product Development* includes parboiling, milling, fortification of raw-milled rice to improve its nutritive values, appearance, and packaging graded products into standard units (100 lb, 50 lb, 10 lb, 5 lb and 1 lb) of sale.

c) *Transportation* accomplishes changes in the spatial distribution of ownership of productive resources, paddy, rice and some information. The cost of transporting products among the stages of the channel is included in the cost of distribution. As the distance between the milling firms and consumers increases, transportation will expand so that its costs may account for a significant proportion of the total distribution costs.

d) *Storage* includes buffer stock and inventory holdings of paddy and or rice over varying periods of time. Inventory holding is required to mitigate the effects of seasonal influences on production, as protection against unavoidable delays in deliveries of rice to wholesale and retail shops, to meet regular demand and to permit transportation in economical units. Buffer stocks holding can be employed to implement Government policy on stabilization.

B-4.3. Facilitating Functions

i) *Standardization and Grading.* Standardization indicates the setting up of basic limits, e.g. of package sizes, the degree of milling and fortification, appearance, sizes of kernels and weights, to which the products of farming and processing must conform. Grading involves sorting paddy and/or rice according to the established standards as suggested in Appendix B.2.

ii) *Financing* entails the provision and management of money and credit facilities by the Agricultural Development Banks to offset temporal delays and gaps between expences and receipts from purchased and/or sold products. Another aspect of financing can be related to *risks* involved in performing certain activities:

1. Storage risks involve physical deterioration, discoloration and losses in stored paddy or rice.

2. Other types of risks can be extension of credits, changes in the supply and demand with a resulting impact on prices, hedging, futures and forward purchases.

Financial facilites and risks can be effectively managed on the basis of increased quality and quantity of marketing information. Other risks may be shifted to financial institutions such as insurance companies. Guarantees may be provided for a specific period when large purchases of rice are involved. Price stabilization and the operation of guaranteed minimum price are examples of risk management techniques employed by the Government.

iii) *Market-making* activities include four tasks:

a) *Negotiation of* legally binding sales contracts for a certain period time.

b) *Market research* for facts and data and their careful interpretation in relation to the situation confronting the decision maker or the firm. Facts and data can be collected from trade papers, daily press, Government publications, personal observations, *market studies,* a firm's own records, business conventions, etc. A crucial function of collecting facts is the skilful interpretation of the information available to the research department or the decision maker.

c) *Creation of demand* through promotion activities, by informing potential buyers of the range of products, opening new markets to be based on other uses of the milled products (see Appendix B.1.), finding buyers by employing salesmen to call, solicit business, and to induce well-established trading firms like the Ghana National Trading Corporation to sell rice from the Rice Mills Unit.

d) *Consumer education* on the nutritive values as well as by appeals to their patriotic sentiments.

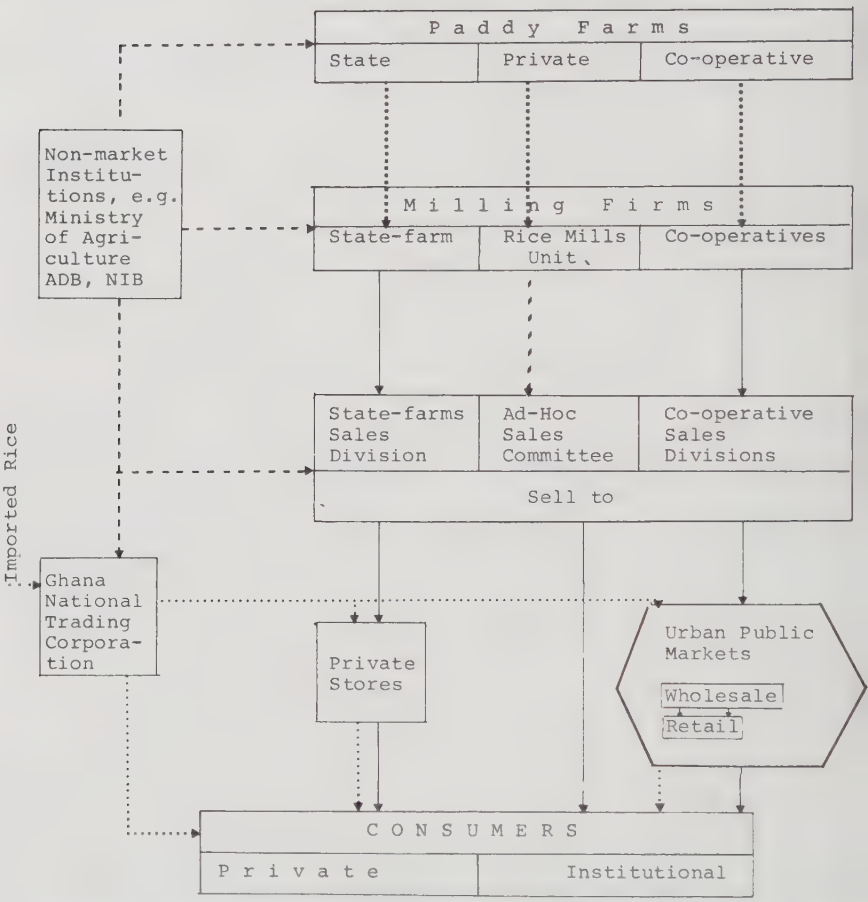
B-4.4. *Transfer of Ownership*

This function comprises actual *buying* and *selling* which are made possible by the foregoing activities and functions. Buying and selling are complementary activities. However it is normal for sellers (and buyers) to establish carefully thought-out policies which tend to simplify the making and execution of decisions about their actions. Consequently policies should be made to guide the system's manager and executives to secure uniform actions under substantially similar and recurrent circumstances or to increase the probability of successful implementation.

We have discussed bulking, product development, transportation, storage, standardization, grading, financing and risk management, market-making (market research, creation of demand and consumer education), buying and selling as the main functional transactions which the business firms perform in the system.

APPENDIX B.5.

Government-controlled Marketing Systems for Paddy, Local and Imported Rice in 1969



Legend:
- ·····▸ Flow of paddy
- - - -▸ Flow of rice from Rice Mills Unit
- ——▸ Flow of local rice
- ·····▸ Flow of imported rice
- - - -▸ Financial flows

ADB Agricultural Development Bank
NIB National Investment Bank

Notes

1. Coombes, C. N., *The Esiama Rice Mill.* Ministry of Agriculture, 1952.
2. This policy was to produce and market such products which has hitherto been imported. It was to be implemented through the proscribed Seven-Year Development Plan for 1963/64 - 1969/70.
3. Reusse, E., *Ghana's Food Industries. An Economic Analysis,* 1968, p. 62.
4. Reusse, op.cit., page 63.
5. Garlick. P., *African Traders and Economic Development,* 1971. *Ghana Today,* Vol. 9, No 10, 5 March 1965, p. 2.
6. La-Anyane, S., "The Role of Marketing in Present-Day Ghanaian Agriculture", Proceedings of USAID/Ghana 8th Annual Agriculture Conference, 1967, p. 87; Lawson, R. M., "Inflation in the Consumer Markets in Ghana" . . . *Economic Bulletin of Ghana,* Vol. 10, No. 1, 1966, p. 39.
7. La-Anyane, op.cit., p. 87.
8. Moe, L., *Ghana: Supply and Demand Projections for Farm Products to 1975 with Implications for US Exports,* 1965, p. 9.
9. Ibid.
10. Nunoo, I. E., "Address", op. cit., in note 6, Krassowski, A., *Development and the Debt Trap, Economic Planning and External Borrowing in Ghana,* 1974, pp. 111-113.
11. Ampah, J. B., Application for a Loan to Finance the 1973/74 Paddy Purchases and Milling Operations of the Rice Mills Unit, 1973, p. 1.
12. Thompson, H. E., "Current Policies to Stabilize Prices and Methods of Keeping up Farmer Incentives", op. cit. in note 6, p. 98, Reusse, op. cit. in note 3, p. 69.
13. Reusse, op.cit., p. 69.
14. Thompson, op. cit. in note 12, p. 98.
15. "More Food and No Markets", Graphic View, *Daily Graphic,* No. 5998, 14 January 1970.
16. Tagoe, C. E., "Budgetary Proposals", in J. A. Agyare, ed., *Proceedings of the 1970 Agricultural Conference on Rice Production,* 1970, p. 111.
17. Reusse, op. cit., pages 65-66. "Let's Have Policy on Rice Production Ghartey", *Daily Graphic,* No. 6018, 6 February 1970, p. 12; Ampah, J. B., op.cit., p. 2.
18. "Braimah: Control Rice Importation", *Daily Graphic,* No. 6017, 5 February 1970, p. 9.
19. Sherman, W. R., *Recent Development in Ghanaian Rice Production,* Research memorandum No. 7, 1969, p. 1; Rice Production Program-Northern Region, mimeograph, p. 1.
20. Op. cit. in notes 15, 16 and 17.
21. Churchman, C. W., *The System's Approach,* 1968, page 29. Stasch, S. F., *Systems Analysis for Marketing Planning and Control,* 1972, pages 33-36.
22. Churchman, op.cit., page 30.
23. Mattsson, L.-G., *Integration and Efficiency in Marketing Systems,* 1969, pp. 46-47.
24. Seven Year Development Plan 1963/64 - 1969/70, pp. 61-62.
25. Argyris, C., *Intervention Theory and Method: A Behavioural Science View,* 1970, pp. 18-19.
26. Argyris, op.cit., p. 21.
27. Argyris, op.cit., p. 18.
28. Sherman, W. R., *Recent Development in Ghanaian Rice Production,* 1969, p. 1.
29. Ibid.
30. Ibid.
31. Afful, E. N., "Credit for Rice Production and Marketing", in J. A. Agyare, ed., *Proceedings of the 1970 Agricultural Conference on Rice Production,* 1970, p. 109.
32. Ghartey, F. N., "Rice Production and Extension", in J. A. Agyare, ed., op. cit., in note 31, p. 70.
33. Tagoe, C. E., "Budgetary Proposal", in J. A. Agyare, ed., op.cit., p. 111.
34. Afful, E. N., op. cit. in note 31, p. 109.
35. Mark-Hansen, A. W., "Rice Marketing-Price Support, Cost of Production, Sales Procedures-Future", in J. A. Agyare, ed., op.cit., p. 106.
36. Nutritional preference (for the private consumer).
38. Mattsson, L.-G., op. cit. in note 23, p. 33.
39. Preston, L. E., *Markets and Marketing,* 1970, p. ii.
40. Preston, L. E., op.cit., page 1.

41. Op. cit. in note 2, p. 60.
42. Ibidem.
43. Op.cit., p. 61.
44. Passim.
45. Mark-Hansen, A. W., op. cit. in note 35, p. 94.
46. La-Anyane, op. cit. in note 6, p. 91.
47. McInnes, W. A., "Conceptual Approach to Marketing", in Cox, R., et al (eds.), *Theory in Marketing,* 1950, p. 60.
48. La-Anyane, op. cit., in note 6, p. 93.
49. Jevons, W. Stanley, *The Theory of Political Economy,* Pelican Classics 1970, p. 133.
50. Nelson, C. T., "Rice Storage and Processing", in J. A. Agyare, op.cit., p. 89.
51. Grist, D. H., *Rice,* 1953, pp. 240-241.
52. Sai, F. A., "Nutritional Values of West African Fruits and Vegetables", in H. D. Tindall, *Fruits and Vegetables in West Africa,* FAO, 1965, Table 1, p. 6.
53. Sraha, J. W., "Agricultural and Medical Nutrition in Ghana", Paper presented to the Dag Hammarskjöld Seminar on Nutrition, p. 7.
54. Mark-Hansen, A. W., "Current Plans to Utilize the 10.000 tons of Maize Brought in Under World Food Program", op. cit. in note 6, p. 103.
55. Larkai, S. O., "Import Policy and Tariff", in Agyare, op.cit., p. 33.
56. "Ghana: Foreign Foods and Politics", *West Africa,* No. 2872, 30 June 1972, p. 842.
57. Nkrumah Government (1957-1966); National Liberation Council (1966-1969); Busia Government (1969-1972) and after 1972, the National Redemption Council.
58. Such as rice, sugar, milk, sardines, and pilchards.
59. *The Ghanaian Times,* No. 4707, 16 January 1973. Editorial.
60. Reusse, op.cit., p. 62.
61. Ibid.
62. La-Anyane, S., "Background Information", in J. A. Agyare, op.cit., pp. 1-3; Coombes, op.cit.; Reusse, op.cit.; Seven Year Development Plan.
63. Ghartey, op.cit. in note 32, p. 74; Appendix B.2.
64. Larkai, op.cit. in note 55, Interview at the Ministries of Trade and Agriculture.
65. Feeder markets function, mainly, as points for collecting, sorting and bulking small quantities into economic lots for further distribution. Most of them function only periodically.
66. Here wholesale activity involved 5 or more bags of rice.
67. From an interview on February 12, 1974.
68. Passbooks were issued to Ghanaian traders against any sizable deposit or provision of a collateral. Passbooks limited the value of credit purchases to the value of cash deposits. Only extremely reliable holders received credits of about 25 per cent over their normal deposits.
69. "Ghana: Foreign Foods and Politics", *West Africa,* No. 2872, 30.6.72, p. 842.
70. The Report of the Commission of Inquiry into Irregularities and Malpractices in Ghana (Abraham Commission, 1965), (ii) Summary of the Commission of Inquiry into Irregularities and Malpractices in the Grant of Import Licences, 1967.
71. Abraham Commission's Report (note 70), p. 12.
72. Op.cit. in footnote 70.
73. *Seven Year Development Plan,* p. 60.
74. Garlick, op.cit., p. 119; Esseks, J., "Government and Indigenous Private Enterprise in Ghana", *The Journal of Modern African Studies,* 9.1 (1971), pp. 11-29.
75. *Seven Year Development Plan,* p. 62.
76. Esseks, J., op.cit., in note 74, page 14.
77. Esseks, op.cit., page 11.
78. Coombes, op.cit. in note 1, p. 4.
79. Coombes, op.cit., p. 1.
80. Coombes, op.cit., p. 1.
81. Coombes, op.cit., p. 4.
82. Coombes, op.cit., p. 3.
83. Coombes, op.cit., p. 2
84. Garlick, op.cit. in note 5, Chap. IX.
85. Garlick, op.cit., p. 120.
86. Calculated from Appendix A.1.
87. Krassowski, op.cit. in note 10, p. 5; Garlick, op.cit., pp. 73-80.

88. Krassowski, op.cit., p. 7; Garlick, op.cit., pp. 74-75.
89. Kaneda, H., *Rural Development Employment and Income Distribution in Ghana. A Personal Report.* Accra, August 1973, p. 18.
90. *Seven Year Development Plan,* p. 67.
91. Ibid.
92. Op.cit. in note 90, p. 61.
93. Op.cit., page 73.
94. Rice Production Program-Northern Region. Mimeograph, p. 1.
95. "Outline of Government Economic Policy", *Daily Graphic,* No. 6748, 17 June 1972, pp. 8-9.
96. Ibid.
97. FAO. *An Inquiry into the Problems of Agricultural Price Stabilization and Support Policies,* 1960, part IV.
98. Appendix B.1.
99. Miracle, M. P. and Seidman, A., *State Farms in Ghana.* Wisconsin University, 1968, pp. 36-39.
100. Reusse, op.cit., pp. 62-63.
101. Reusse, op.cit., p. 63; Sherman, W. R., op.cit. in note 19, p. 5.
102. Reusse, op.cit., p. 62.
103. Krassowski, op.cit., p. 9.
104. Dinwiddy, B., *Promoting African Enterprise,* London, 1974, p. 56.
105. Garlick, op.cit., p. 122.
106. Krassowski, op.cit., p. 59.
107. *Seven Year Development Plan,* p. 61.
108. Ibid.
109. Reusse, op.cit., p. 62.
110. Ibid.; Mettrick, H., *Policies and Institutions in Ghanaian Agriculture.* Development Studies No. 9. University of Reading 1971, p. 70.
111. Sherman, W. R., op.cit., pp. 5-6.
112. Ibid.
113. Safo-Adu, K. "Ghana Government Policy on Rice", in J. A. Agyare, op.cit., p. 6.
114. Afful, E. N., "Credit for Rice Production and Marketing", in J. A. Agyare, op.cit., pp. 105-108.
115. Moe, Lyle E., *Ghana: Supply and Demand Projections for Farm Products to 1975 with Implications for US Exports.* Washington, 1965, p. 9.
116. Safu-Adu, op.cit., p. 7.
117. Ghana Sector Studies: *Grain Marketing, Transport and Storage,* Accra, 1970, p. 35.
118. Ampah, J. B., op.cit., p. 1; Reusse, op.cit., p. 62.
119. Ampah, op.cit., p. 2; Reusse, op.cit., 71; Sherman, op.cit., pp. 5-6.
120. Ampah, op.cit., p.1. The Management function is supervised by the Ministry of Agriculture.
121. Ampah, op.cit., p. 2.
122. Ibid.
123. Ampah, op.cit., p. 1.
124. Personal observation.
125. Reusse, op.cit., p. 71.
126. The schema was drawn on information about Tamale Rice Mill's operations in 1971/72 crop year.
127. From an interview with J. B. Ampah, Manager of the Rice Mills Unit.
128. Competition in this sense represents the pattern of demands by the interest groups for their means of sustenance.
129. Factors which may affect the Unit's paddy purchases are the farmers' willingness to sell at the guaranteed price, storage and milling capacities, financial resources and the use of managerial expertise.
130. Garlick. P., op.cit., p. 122.
131. Passim.
132. Garlick, P., op.cit., p. 130.
133. The Aliens Compliance Act of 19 November 1969 ordered all aliens without residence permits to leave Ghana within two weeks. See *West Africa;* (i) 29 December 1969, pp. 1429-31, (ii) 30 December 1969, pp. 1533-34 and 1537.

134. Garlick, op.cit., p. 131.
135. Garlick, P., op.cit., p. 130, also *Seven Year Development Plan,* p. xx-xxi.
136. Garlick, op.cit., p. 130.
137. Mensah, A., "Distribution System", *Ghanaian Times,* No. 4720, 29 January 1973, p. 6.
138. Passim.
139. Tetteh, D., "Why G.N.T.C Made Poor Profit", *Daily Graphic,* No. 5981, 23 December 1969, p. 1.
140. In Fig. 3, the term "Expatriate" was used.
141. Some details of the structure of Government-operated channels can be found in Appendix B.5.
142. Data refer to intervention measures in the Northern and Upper Regions only.
143. Fuseini, B. A., "Rice Farmers' Case", *Daily Graphic,* No. 6695, 17 April 1972, p. 7.
144. Ampah, J. B., private communication; Fuseini, op.cit., p. 7.
145. Fuseini, op.cit., p. 7; From interviews with C4.63 growers.
146. N. Yenli, an Agricultural Officer in Tamale, disclosed this in a discussion at the 1970 Conference on Rice Production. See J. A. Agyare, op.cit., p. 85.
147. The purchasing method was that paddy was poured out from bags so that extraneous objects could be removed. It was then rebagged and weighed.
148. Ampah, J. B., op.cit., p. 2.
149. Ibid.; private communication (Ampah).
150. Comprises all other milling firms in the private Ghanaian-owned Marketing System.
151. Ghartey, F. N., op.cit., p. 77.
152. Ghana Sector Studies, op.cit., pp. 33-35.
153. *Daily Graphic,* No. 6017, 5 February 1970, p. 9.
154. *Ghanaian Times,* 15 March 1973, p. 6.
155. Ampah, J. B., private communication.
156. Ampah, J. B., op.cit., p. 2.
157. Ibid.
158. Reusse, op.cit., p. 69.
159. By the Food Research and Development Unit of FAO in Accra, see Reusse, op.cit., p. 71.
160. Appendix B.3.
161. Also Fuseini, B. A., op.cit., p. 7.
162. Brokens tend to go rancid because of the fatty acids which have been exposed to oxygen; it is susceptible to infestation of all kinds-fungus growth, discoloration, etc.
163. Agyare, J. A., op.cit., pp. 84-85.
164. Tagoe, C. E., op.cit., 111.
165. Nelson, C. T., op.cit., p. 87.
166. Appendix B.1.
167. Private conversation on 17 January 1974.
168. Reusse, op.cit., p. 69. But commercial imports actually decreased by about 20.600 tons. See Appendix A.1.
169. Ibid.
170. *Seven Year Development Plan,* p. 60
171. Ampah, J. B., op.cit., p. 2.
172. *Seven Year Development Plan,* p. 10.
173. Garlick, P., op.cit., p. 125.
174. Ibid.; also *Seven Year Development Plan,* p. 10.
175. Ampah, J. B., op.cit., p.2. The Rice Levy Fund had been in use since 1970/71.
176. La-Anyane, S., "Issues in Agricultural Policy", in *Background to Agricultural Policy in Ghana,* Legon, 1969, p. 13.
177. Proceedings of the 1970 Agricultural Conference on Rice Production especially the articles by Ghartey, Tagoe, Afful, Mark-Hansen and Nelson.
178. Mark-Hansen's "vertically integrated set up"; Tagoe's "more comprehensive approach involving the Regional Tender Food Board"; private distributors and also co-operative marketing organizations.
179. For example a marketing board.
180. Mattsson, L-G., op.cit., p. 46.
181. Ibid. "Degree" in this sense refers (i) to the state of the model organization and to (ii) the "full, partial or no" integration. The reader can refer to Mattsson's work for more insights.
182. Mark-Hansen, op.cit., p. 99. The words in brackets are mine.

183. Ibid.
184. Mattsson, L-G., op.cit., p. 46.
185. Ibid.
186. In terms of Mattsson's concept, this may mean attaining a certain "degree of institutional integration". Here this means the degree of liaison between the Government and the Management Unit.
187. Ampah, J. B., op.cit., p. 2.
188. Tamale Rice Mills Unit has been operating with one Hansetta mill. However, another mill was scheduled to go into operation during 1973/74 milling season.
189. Calculated per shift of 8 hours/day. As such the total maximum capacity of the 3 milling firms which together operate 4 mills will be between 320 and 480 bags per shift of 8 hours.
190. Figures in brackets show storage capacity of facilities.
191. Macfarlane, J. F., "Memorandum on Grain Marketing in Ghana", Accra: Ghana Food Marketing Corporation, 1971, p. 3.
192. Implementation of policies on administration, production, market-making and financing as indicated in Fig. 6.
193. Can also be a jointly negotiated selection of a set of strategies or actions which will reflect, as far as possible, a compromise of the participants' interests.
194. Ampah, J. B., op.cit.
195. See Appendix A.7 for a summary.
196. Ampah, op.cit., p.4.
197. Ibid.
198. Ampah, op.cit., p. 3.
199. This assumes that imported rice would not be sold as a separate product for sometime.
200. Grist, op.cit., pp. 247-250.
201. Grummer, G., *Rice. Technical Fundamentals.* Edition Leipzig 1970, p. 139.
202. These should be reported separately.
203. Agyare, J. A., Proceedings of the 1970 Agricultural Conference on Rice Production held in Accra 4-6 February, 1970.
204. Reusse, E., op.cit., p. 8.
205. Sherman, W. R., *The Ghanaian Rice Marketing System.* Research Memorandum No. 3. Accra: USAID Mission to Ghana, 1968.
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210. Ibid.
211. Ghartey, op.cit., p. 78.
212. Nelson, C. T., op.cit. p. 89.
213. Nelson, op.cit., p. 86.
214. Ibid.
215. Ibid.
216. Mark-Hansen, A. W., "Marketing-Price Support, Cost of Production and Future Proposals" in J. A. Agyare, op.cit., in supra note pp. 94-101.
217. Mark-Hansen, op.cit., p. 95.
218. Ibid.
219. Agyare, op.cit., p. 16.
220. Ibid.
221. Passim.
222. Larkai, S. O., "Import Policy and Tariff", op.cit., p. 33.
223. La-Anyane, S., "The Role of Marketing in Present-Day Ghanaian Agriculture", op.cit., p. 91.
224. Ibid.

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